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PHYSICAL ANTHROPOLOGY

ITS SCOPE AND AIMS; ITS HISTORY AND PRESENT STATUS IN THE UNITED STATES

BY

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To

my deceased wife,

MARIE HRDLIČKA

who stood loyally and devotedly behind me
in all my work.

PREFACE

The publication in a book form of the articles that follow and which originally appeared in the *American Journal of Physical Anthropology*, is to provide the student of anthropology in this country, in a handy form, with something that will assist him in laying the needed foundations for his chosen work, and in becoming acquainted with American anthropological bibliography.

Organized progress in any branch of science is possible only when the field of that branch becomes well defined. But a definition to be of value must in a large measure be based on experience, and that not on individual but on the collective experience of the workers in that line. The history of a given branch of science thus becomes one of the essentials to the proper comprehension of the scope, objects and demarcations of that branch. These are the reasons for the association of the chapters on THE SCOPE AND AIMS of Physical Anthropology with those on its HISTORY.

The history here dealt with applies essentially to the United States and Canada. To extend it to Anthropology in all parts of the American continent and eventually all parts of the world where more or less development of the science has been realized, would be a most desirable task, but it is a task that can only be carried out through coöperation. Abroad something has already been done in this direction, particularly in France, the mother-country of physical anthropology (*e. g.*, by Paul Topinard in his *Élém. d'Anthrop. gen.*); but no systematic effort extending to all civilized countries has as yet been attempted. Such an effort should be one of the first cares of the international Committee, Board, or Association of Anthropologists, towards the realization of which we are progressing.

The text as now printed includes a number of corrections on matters called to the attention of the writer by correspondents. It is provided with a new detailed index to facilitate reference. And it is supplemented by the portraits of the men to whom American anthropology is most indebted.

A. H.

Washington, D. C., June 20, 1919.

PHYSICAL ANTHROPOLOGY: ITS SCOPE AND AIMS; ITS HISTORY AND PRESENT STATUS IN AMERICA

ALEŠ HRDLIČKA

A. Physical Anthropology, Its Scope and Aims[1]

I. DEFINITIONS

An understanding of whatsoever exists, formulated and preserved in memory or in writing, is *knowledge;* and systematic search for knowledge, on the basis of existing foundations of learning, is *science.* Being of the utmost utility, science constitutes the most important intellectual function of mankind.

A branch of science may be defined as a portion of systematized research that extends to closely related phenomena and has become the special function of a class of qualified observers. One of the most interesting and far-reaching of such branches is Anthropology. This has been frequently but somewhat vaguely defined as "the science of man;" perhaps a more fitting definition would be "the comparative science of man," for its main characteristic, the criterium in fact, which differentiates it from many closely related branches of science, is that of comparison. More specifically Anthropology may also be defined as that portion of systematic research which deals with the differences, and causes of the differences, in structure, in function, and in all other manifestations of mankind, according to time, variety, place, and condition.

In the course of its development, or since the beginning of the last century, Anthropology has become differentiated into a number of important branches, which follow correlated yet separate aims, and which, while often coöperating, are developing in large measure independently and through distinct personnel. In America since Powell's

[1] Published in preliminary form in *Science*, N. S., XXVIII, July 10, 1908, 33–43; and *The Anatomical Record*, II, no. 5, 1908, 182–195.

time the recognized main subdivisions of Anthropology are: Archeology, or the study of man's products and material accomplishments in the past; Ethnology, or the study of man's intellectual, linguistic, and present material activities; and Physical Anthropology, or the study of racial anatomy, physiology, and pathology.

It is the last-named branch, or Physical Anthropology, which interests us exclusively in this place. Formerly known simply as "Anthropology," it was defined by its principal founder and promoter, Paul Broca, as "the natural history of the genus homo," or, more in detail, as "that science which has for its object the study of mankind as a whole, in its parts, and in its relation with the rest of nature."[2] It can be defined to-day in the briefest form as the *study of man's variation*. It is that part of Anthropology which occupies itself in a comparative way with the study of the human body and its inseparable functions. It deals with the causes and ways of human evolution, and with the development, transmission, classification, effects, and tendencies of man's bodily and functional differences. It is, briefly and comprehensively, the research into man's anatomical and physiological variation.

The comparative element shows clearly the position of Physical Anthropology in relation to general human anatomy and physiology, and general biology. The objects of general human anatomy and physiology are essentially the pursuit of knowledge regarding structure and function in the average man of the present day; while the chief aims of general biology are to trace the structural and functional relations of the various species of living beings to one another, and to seek the general causes and processes of organic variation and evolution. Physical Anthropology is a continuation—and extension—of all these to the chronological, racial, social, and even pathological groupings of mankind, and it reaches with its investigations beyond man only in so far as may be necessary to an understanding of the phenomena which it encounters. If it had not its present designation it could well be called "advanced human anatomy, physiology, and biology."

[2] Article "Anthropologie" in Dict. encycl. d. sci. méd., vol. V, p. 276, Paris, 1866; also in Broca's Memoires d'Anthropologie, Paris, 1871, vol. I, p. 1. References to numerous definitions in R. Martin, System d. (physischen) Anthropologie, etc., *Korr.-Bl. d. d. Anthr. Ges.*, 1907, Nr. 9/12, and in his Lehrbuch d. Anthr., Jena, 1914. See also L. Manouvrier, *Rev. de l'École d'Anthr.*, 1904, pp. 397–410; F. Boas, "Anthropology," pp. 1–28, Columbia University Press, N. Y., 1908; and F. Frassetto, Lezioni di Antropologia, 3 vol., Rome, 1909-13.

II. HISTORICAL

Physical Anthropology is a comparatively recent branch of science, though its roots extend far back in the development of human reflection. It is interesting to know that one of its main incentives was the discovery of America, with its new race of people, no mention of which occurred in any of the old accounts or traditions. This most sensational event was followed by discoveries of other lands and peoples in the Pacific, and this was succeeded by rapidly increasing knowledge of organized beings in general, including the anthropoid apes. All this led irresistibly to new lines of thought by scientific men, as well as to a general doubt as to the correctness of the old theories of creation; and the mental fermentation, though greatly impeded by old dogmas, lack of precise data and collections, and the backward state of many collateral branches of science, progressed until it finally pierced the clouds of the past and manifested itself in anthropological publications. Peyrère's "Preadamities" appeared in 1655, and, notwithstanding prohibitions and the small real worth of the book, it was received with eagerness and read very extensively. In 1699 was published Tyson's classic on "Comparative Anatomy of Man and Monkey." And in 1735 one of the actual corner stones of modern anthropology was laid by Linnaeus. It was in the "Systema Naturae" of this great naturalist that man for the first time was placed within the line of living beings in general, and that his close organic relations with the rest of the primates was authoritatively expressed. Then followed Buffon, the precursor of Lamarck, with whom the new branch of the natural science of man took more definite form, and thenceforward the progress toward Anthropology, as differentiated to-day, has been continuous.

Those who contributed more directly toward the development of Physical Anthropology are too numerous to mention: they really include all the prominent naturalists and anatomists of the latter half of the eighteenth and the first half of the nineteenth century, such as Daubenton, Camper, Lamarck, Blumenbach, Soemmering, Lacépède, Cuvier, Retzius, the brothers Geoffroy, Lawrence, Edwards, Serres, Pritchard, Morton, and many others.[3] Even the teachings

[3] For details concerning the history of anthropology, see T. Benlyshe, *Mem. Anthr. Soc.*, London, vol. I, 1863–64, pp. 335–458; P. Topinard's Éléments d'Anthropologie générale, Paris, 1885, pp. 1–148; L. Niederle, *Athenaeum*, Prague, 1889 (repr. pp. 1–19); F. Boas, *Science*, October 21, 1904, pp. 513–524; references to more or less direct contributions to the subject in R. Martin, op. cit., and in "Recent Progress in American Anthropology," *Amer. Anthr.*, vol. VIII, no 3, 1906, pp. 441–556.

of Gall, however erroneous in application, have aided its growth, for they stimulated research into the variations of the head, skull, and brain, gave rise to various craniological collections, and were the main incentive to Morton's ultimate and remarkable work, the "Crania Americana." The discussions of the monogenists and polygenists, particularly those of the nineteenth century, were also of much importance and assistance.

The first effort toward an organization of forces in the new field was made as early as 1800, when a small body of scientific men formed themselves, in Paris, into a Society of Students of Man (*Société des observateurs de l'homme*). It was in this little circle that the term Anthropology (used previously as a title for some works on man of philosophical and in a few instances of simple anatomical nature) was employed in something like its present significance. This attempt at organization, however, was premature and was abandoned two years later (1803), after little had been accomplished.

In 1832 the Museum of Natural History in Paris, under the influence of Prof. William Edwards, transformed its chair of Anatomy into that of Natural History of Man, and to this Serres, in 1839, added Anthropology. These were in many respects remarkable steps forward, but the time was not yet ripe for the subject to assume much importance. There were no large collections, no material evidence of man's antiquity or evolution, and the public mind was still to a considerable degree medieval.

From 1839 to 1848 Paris had a Société d'Ethnologie, which included Physical Anthropology, but again with little lasting result. In 1843 the Ethnological Society was founded in England.[4] It included men like Prichard and Richard Owen, and its main object was the study of primitive races. But it was not until after the beginning of the second half of the nineteenth century, with the advent of Paul Broca and his collaborators, and the founding of the Société d'Anthropologie in Paris (1859),[5] that the actual birth of the new branch of science may be said to have taken place. This is less than sixty years ago; and how difficult the beginnings were, even then, will be appreciated from the fact that when permission to establish the society was sought, the Minister of Public Instruction, notwithstanding the rank of those who, with Broca, applied for the sanction, refused to countenance

[4] See Keith, A., Presidential Address (Roy. Anthr. Inst.), *Jour. Roy. Anthr. Inst.*, XLVII, 191 , 12–30.

[5] L'École d'Anthropologie de Paris, 1876–1906, Paris (F. Alcan), 1907.

the matter. Finally the petition was sent to the Prefect of Police, but that official was equally unwilling, and returned the document to the Ministry. It was not until after the influential intervention of Ambroise Tardieu that one of the chiefs of the police department became convinced that the scientific gentlemen were not quite so dangerous to the welfare of the empire or to society as was suspected, and not finding, moreover, any law that forbade the gathering of fewer than twenty persons, the eighteen future anthropologists were finally informed that their meetings would be tolerated. But Broca was made personally responsible for anything that might be said at the meetings against the government or religion, and for further safety every meeting was to be attended by an officer in plain clothes.

From the establishment of the Société d'Anthropologie in Paris, the progress of the new branch of research was rapid. Before long similar societies came into existence in England (1863), in Germany (1869), and other countries, some of the leading men in medical circles taking active part; the publication of anthropological journals was commenced; an efficient system of anthropometry, with the required instruments, was devised, principally by Broca, and detailed instructions in the system were published by the same author; collections were begun and important lines of investigation undertaken in different parts of Europe as well as in the United States; and in 1876 the École d'Anthropologie was founded in Paris for academic instruction and training in the new branch of research. Finally, in 1885, appeared Paul Topinard's great textbook, the "Éléments d'Anthropologie générale," which to this day is a respected and indispensable volume in our laboratories. Much progress was also made during this period in the differentiation of Anthropology as a whole into its present main subdivisions.

But this quarter century of the history of Anthropology as a separate branch of learning—a period of the greatest and most hopeful activity, the detailed and still unwritten history of which is of absorbing interest—was not one of uninterrupted progress. Unexpectedly, and it now seems unjustifiably, a crisis was encountered which seriously affected progress, and from the effects of which Physical Anthropology is only now beginning to recover. This crisis was the result of a schism in anthropometry, begun in 1874 by von Ihering and completed by the German anthropologists at Frankfurt in 1882. This is not a suitable place for a discussion of the causes or the details of the case; suffice it to say that the division resulted in great loss of effort and had a gen-

erally untoward influence on the progress of the science. It is only quite recently that international commissions, composed of foremost anthropologists of all countries, have endeavored to adjust the differences and, by impartially selecting the best from existing methods in anthropometry, to effect a much needed uniformity. Two conferences have been held, one in 1906 at Monaco and the other in 1912 at Geneva,[6] with much harmony and most encouraging results. A complete agreement on anthropometric methods will be of the greatest importance to the branch and mark an epoch in Physical Anthropology.

This chapter, necessarily condensed and inadequate, may be appropriately concluded with a few words concerning the actual status of Physical Anthropology. The subject, like the entire history of the science, calls for thorough presentation, but this is out of the question at the present time.

Physical Anthropology to-day numbers distinguished followers wherever science flourishes. It has already a bibliography that reaches into tens of thousands of titles. It maintains a number of well-equipped laboratories, where students are trained or may conduct investigations. It possesses most important collections of material, which from year to year increase in numbers and value. It sustains or contributes a large body of original material to anthropological journals of high standing, such as the *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, *L'Anthropologie*, the Journal of the Royal Anthropological Institute of Great Britain and Ireland, *Man*, the *Biometrica*, the *Archivio per l'Antropologia*, the *Giornale per la Morfologia dell 'Uomo e dei Primati*, the *Archiv für Anthropologie*, the *Zeitschrift für Morphologie und Anthropologie*, etc. Numerous other results of investigations are disseminated through periodicals devoted to anatomy, general biology, and other subdivisions of anthropology. Finally, it is a subject of instruction in the École d'Anthropologie of Paris, in the Anthropological Institute of the University of Zürich, in various large museums, and in many of the principal universities of both hemispheres. It is still struggling with numerous difficulties, but it has

[6] See F. v. Luschan, Die Konferenz von Monaco, *Korr-Bl. d. d. Ges. f. Anthr.* etc., Juli, 1906, pp. 53 et seq., in *Archiv. f. Anthr.*, 1906, H. 1–2, and "Entente internationale pour l'unification des mesures craniométriques et céphalométriques," *L'Anthropologie*, 1906, 559–572; ibid., 1912, 623–627; also "The international agreement for the unification of anthropometric measurements," etc., reported by W. L. H. Duckworth, Univ. of Cambridge, 1912, pp. 1–11.

now a solid foundation, has repeatedly shown itself to be of public and national utility, and has surely before it a future of great importance.

III. RESULTS ACCOMPLISHED

The questions are often asked by those whose preoccupation has not permitted closer insight into this branch of research, What has Physical Anthropology accomplished? and What are its aims for the future? These are legitimate queries and deserve to be answered so far as may be possible.

The amount of work actually done in this branch of science must be considered together with the many obstacles that stood, and to a large extent still stand, in the way of its development and of fruitful investigation.

The most influential of these obstacles was and still is the imperfect state of anatomical knowledge, which in large measure is the starting point of Physical Anthropology. It is obvious that structural comparison, extending to various groups of humanity, can properly be carried on only on the basis of a thorough knowledge of structure in some one type of man, to us preferably the white race. Had Anatomy been able to furnish such a foundation for Physical Anthropology, the progress of the latter would have been very much easier and more rapid. As it was, the new branch commenced to be differentiated while general human anatomy was itself still imperfectly understood, and in consequence it was confronted with the tedious task of establishing or of improving the bases for its future comparisons. Thus a large portion of the work of anthropologists was hitherto and still is almost purely anatomical.

It is safe to say that fifty years ago, when the Société d'Anthropologie was founded in Paris, there was not a single feature of the human organism that was thoroughly well known and understood. Even to this day, with all the excellent work that has been accomplished, there is, it is safe to say, not yet a single bone in the body, and no other organ, the knowledge of which and of its total range of variation is perfect, and that even in the white race, which has been most studied. The splendid anatomical textbooks of the present time give little more than generalities, and are marked by many omissions and imperfections. In special treatises and periodicals the literature is much richer, but in the matter of details there are innumerable lacunæ. Yet details are the essentials of all knowledge, and they are indis-

pensable for anthropological comparisons. It would almost seem from this that the birth of Physical Anthropology had been premature; but if one stops to consider the deep interest its problems have for humanity, it will be seen that its early rise, even if on the but partly prepared soil, was quite natural.

The second obstacle to the progress of Physical Anthropology has been, and to a diminishing extent continues to be, the defective state of collections of requisite material. The third was the dearth of properly trained men; and in the fourth place should be named the difficulties, based on prejudice or incomprehension, attending the collection of accurate anthropological data in many parts of both the uncivilized and the civilized world. Still further impediments that attended this branch of natural science more than others were those which accompanied the elaboration of the necessarily extensive series of data, and especially their publication.

With regard to material, what collections of value to Physical Anthropology existed even as late as half a century ago? Fair beginnings, it is true, had been made before that time in a number of European cities, and a single particularly interesting one on this continent—the collection gathered by Morton in Philadelphia; but all this material was limited to crania, and was useful in arousing curiosity and false expectations rather than in leading to definite progress in our science. It required years of assiduous excavation and collecting before scientific work of any extent could anywhere be attempted. Such collecting, fortunately, has been carried on in a diligent and continued way to this day, until there are in this country alone several great and many lesser gatherings of identified skeletal and other anthropological material, led by that of the U. S. National Museum. Yet even now we are far from the goal in this direction; that is, from collections comprising adequate series of bones of the entire skeleton, besides those of other normal important parts of the body; collections that would enable us to determine the complete range of variation in these parts in at least the most significant groups of mankind. The requirements in this direction will appear more clearly when it is appreciated that, to determine the total range of variation in a single long-bone, such as the humerus, in any group to be studied, there are needed the remains of hundreds of adult individuals of each sex from that group. As it is, even the greatest collections we possess still fall short of the requirements, consequently our investigations can be seldom perfect or final.

The dearth of properly trained men has been and is still a great

hindrance in Physical Anthropology. The cause of this deficiency is simple enough. The branch demands extensive, preferably medical, preparation and arduous application, for which only moderate pecuniary compensation is offered at best. It has not yet reached its full ultimate civic utility and hence receives less public recognition than the applied sciences. Finally, in the centers of anthropological instruction it is too often associated with archeology and ethnology, which in the beginnings are more attractive and capable of diverting the average student in their direction. Under these circumstances the recruiting of regular workers of the right kind is precarious; a new competent physical anthropologist is almost an accident, and the supply of students falls far short of the needs.

The difficulties in gathering the requisite material, and even the crude data alone, have been and are still very great; in fact they are sometimes insurmountable. Religious beliefs, sentimentality and superstition, as well as love, nearly everywhere invest the bodies of the dead with sacredness or awe which no stranger is willingly permitted to disturb. It is seldom appreciated that the remains would be dealt with and guarded with the utmost care, and be used only for the most worthy ends, including the benefit of the living. The mind of the friends sees only annoyance and sacrilege, or fears to offend the spirits of the departed. This may not apply to older remains, but these in turn are frequently defective; yet even old remains are sometimes difficult to acquire. Such conditions, with occasional exceptions, are common among the civilized and savage alike, hence to collect large supplies of material indispensable to Physical Anthropology is often arduous and unsatisfactory. The impediment to the advance of the science that these sentimental conditions constitute is beyond computation. And the difficulties extend even to data that can be derived only from the living. The stumblingblocks due to ignorance and superstition are particularly numerous in the paths of measuring the illiterate, while fears of detection of concealed defects, curiously, are met among the otherwise enlightened. Compare with this the facilities of the zoölogist, botanist, and biologist!

Notwithstanding these and other obstacles, including those placed in the way by the ill-fitted traveler, the incompetent investigator, and the self-assumed authority extending from other branches of science, Physical Anthropology has already accomplished considerable useful work. It has established a system of precise measurements of man and his remains, and furnished the needed instruments; it has

directly advanced general anatomy, particularly that of the skeletal system and the brain of man and other primates, and has contributed to zoölogy, general biology, and other natural sciences; it likewise has established the physical knowledge of the races and many of their subdivisions. Through its activities it has also accelerated the advance of its sister branches, ethnology and archeology. It has given a marked impetus to search for the remains of early man and inspired thorough critical accounts of the physical characteristics of the finds made. It has actuated and to a large extent carried out the study of the development of man from his inception onward; it has brought about physical investigation and through it an enhancement of our knowledge of school children as well as of advanced pupils, of recruits, and of the criminal and other defective, delinquent, or dependent classes; and has led directly to practical systems of identification of criminals. It has participated in and promoted studies in human heredity, degeneration, and hybridity; it has increased our knowledge of the functions and pathology of the human body, and especially of the brain; it has furthered the gathering of vital statistics; and it has already taken steps toward aiding other branches in determining, on the basis of acquired knowledge, ways toward safeguarding and improving the human race. This outline is necessarily condensed, yet it will indicate in a measure that Physical Anthropology, notwithstanding the many and serious obstacles in its path, has already well justified its separate existence and the decrees by which the French Government pronounced it, in 1864 and again in 1889, a *science of public utility*.

IV. AIMS

The object of the final section of this memoir is to outline briefly, yet not too generally, the future field and aims—in a word the future program—of Physical Anthropology, as it now looms before us. Could such a program be perfected, it would itself mean an important step forward. It would, of course, differ somewhat from country to country, but it would nevertheless possess the same essentials.

The future activities of Physical Anthropology must be directed to the improvement of its own organization and means, as well as in the direction of further research. The more thoroughly and efficiently the former is effected, the more important and prompt will be the scientific results.

The main needs—which logically become the aims—of the anthropologists themselves include more regular and extended recruiting of their ranks, and a closer general unity and coöperation. The most urgent impersonal needs are: definite unification and perfection of anthropometry in its entire range; systematization of the methods of treating and recording data; preparation of modern textbooks; improvement and advance in instruction; advance toward strictly specialized periodicals; the compilation of a complete bibliography relating to the subject, and its continuation; the generalization of information concerning collections of material for the benefit of students; the augmentation and improvement of collections; the establishment of adequate anthropological exhibits; and the general diffusion of anthropological knowledge.

Recruiting of the right kind of men is very urgent. It conditions further development and specialization of academic instruction, with ample opportunities at laboratory training; it makes highly desirable an extension of lectures on Physical Anthropology to medical colleges; and, above all, it necessitates pecuniary resources by means of which scholarships may be offered to enable men to be trained in the laboratory and in the field, with an improvement in the prospects of their employment, at reasonable compensation, after the necessary prolonged preparation. The time required for the proper training of a physical anthropologist, including that needed for acquiring indispensable experience, is several years of postgraduate activity; and as the men who are best fitted for such training and most likely to be recruited are those who have completed a medical course, these years of specialized training and labor necessitate a pecuniary loss, which should in some manner be ultimately recouped. Until effective provisions are made to cover these points it cannot be expected that the requisite numbers of students will be attracted by what Physical Anthropology offers in the way of a life work. This applies particularly to the United States, where the prospects of the graduate in medicine, as well as in other sciences, are brighter than in many parts of the Old World. The most suitable means of compensation during the preparatory years would perhaps be through scholarships, continued with the most promising men until permanent positions were secured. The opportunities of employment of well-trained anthropologists are not so few as might seem, and they are bound to increase in the future. The principal problem at present is to secure salaries commensurate with the required preparation for this branch of research and service, and

with the prospects of a man as well equipped had he chosen another vocation.

Closer unity and coöperation among physical anthropologists throughout the world is one of our foremost and cherished aims. The time is surely ripe for closer and universal union of workers in this field. Local and national organizations have their uses, but as the sphere of interest of Physical Anthropology embraces the whole of mankind, and as the branch in its broader aspects is eminently one and panhuman, so we need an international union of all investigators in this line. Important steps in this direction were actually taken before the war, and there exists now, though for the time being necessarily dormant, an International Committee for such purpose.[7] After the bitterness of the war shall have become sufficiently assuaged, this or a new committee will, it is confidently expected, resume the activities and proceed toward the realization of our hopes for a unit world-wide organization.

Another and even more important aim of Physical Anthropology is the further standardization and perfection of anthropometric methods and instruments. A great stride in this direction was taken by each of the two already mentioned international anthropometric conferences, at Monaco in 1906 and at Geneva in 1912. Much however remains to be done. The very nature of future conferences for this purpose will need modification. Their membership should be sufficiently inclusive, and constituted months if not years ahead. It should, in fact, if at all possible, be permanent. Every proposal should be communicated to all members and ample time afforded for submitting it to proper tests. The ideal arrangement would be a permanent International Anthropometric Board, constituted as a part of the International Organization mentioned in the preceding paragraph, the personnel to consist of the most experienced men in anthropometry in each country. To such a board would be referred all proposals relating to changes or innovations in instruments, in measuring, and in methods of elaborating and presenting anthropological data. Such a body would naturally progress toward the publication of suitable bulletins, and could usefully extend its interest to the supervision if not the control of the manufacture of standard instruments and other indispensable adjuncts for anthropological observations. The ulti-

[7] Established at the occasion of the XVIII Intern. Congr. of Americanists, at London, 1912; Dr. R. R. Marett of the Exeter College, Oxford, England, is the secretary of the committee.

mate establishment of such a board will be one of the greatest steps toward placing anthropometry on a thoroughly definite, modern, and scientific basis.

In this connection it may not be amiss to refer briefly to the present state of our methods in dealing with anthropometric data. To a considerable extent our ways in this respect are still largely individualistic and empirical. They range from the simplest and defective methods of the pioneers in anthropology to the mazes of the lofty, disdainful "biometrician." In fact it has proceeded so far that not a few workers hesitate, if indeed they are not ashamed, to present their data without the use of mathematical formulæ; and often such formulæ or methods are used, if not to cover defects, at least without due explanation or understanding of their significance. Some degree of regulation in these matters is urgently needed. We must abolish what is imperfect in the old methods and be shown our limitations with the new. Although working largely with measurements and hence with mathematical units, it must not be forgotten that in anthropology, as a rule we are dealing with series that are irregular, deficient in numbers, more or less impure, and hence complicated in composition. Mathematically sufficient and racially pure series are almost hopeless to expect, even when we deal with large numbers of living people. The tasks of the anthropologist therefore will always be essentially analytic—and analytic in the physiological rather than in the purely mathematical way. It must further be borne in mind that in Physical Anthropology, more than in many other branches of science, a high-class yet simple exposition of facts, approachable by every educated person, is of so great an advantage that the matter of extensive use of algebraic formulæ in publication cannot be passed over lightly. Yet mathematical regulation of the curves of distribution, mathematical treatment of data bearing on variation, etc., are urgently called for and will necessarily prove of great utility. Thoroughly practical, sensible regulations of such nature should be one of the main objects of the international board above referred to. The whole matter demands early and most careful attention.

A supply of modern textbooks is still a pressing need. It is more than thirty years since Topinard[8] gave us his great handbook which for a long while yet nothing will wholly replace. It is four years since another very comprehensive and valuable textbook appeared,

[8] Éléments d'Anthropologie générale, Paris, 1885.

namely, that of Martin.[9] But neither of these nor the two together are sufficient; and in English we have nothing of such a nature, not even in the way of a translation.[10] The most urgent present need is not so much for a compilation of the results of anthropological work as for a compact, satisfactory handbook on anthropometry and methods in general.

An advance toward strictly specialized periodicals, to be devoted exclusively to Physical Anthropology, is merely an aim at a further step in differentiation, such as is manifested in all branches of research after having reached a certain stage of development. So far as America is concerned, this aim has now reached its realization. The writer has advocated the establishment of such a Journal since 1908. In 1916 he presented the proposal in definite form to the subcommittee on Anthropology of the Committee of One Hundred on Research of the American Association for the Advancement of Science, and it received the full approval of both the subcommittee and the committee. Late in 1917 this approval was seconded unequivocally by the Secretary of the Smithsonian Institution, the Committee on Anthropology of the National Research Council, and the American Anthropological Association. In view of this general approbation there is promise that the Journal will be well received and be soon on a permanent and really serviceable basis.

The importance of complete and continued bibliographical records of the results of Physical Anthropology is self-evident, and is an aim that calls for the earliest possible realization. Beginnings along this line have already been made, particularly in the matter of current literature, but the movement requires definite organization and extension to the older publications. Our ideal in this direction is a competently annotated bibliography, universal in scope, and liberal of inclusion.

Improvement in and generalization of information concerning collections in Physical Anthropology are highly desirable. Such information, furnished through periodically supplemented registers of newly acquired material, would greatly promote collaboration as well as the extent of research. An additional procedure of much consequence would be the deposit of smaller collections in the larger centers in each country, where they could be better cared for and become more easily

[9] Lehrbuch der Anthropologie, Jena, 1914.

[10] The English "Anthropology" by Topinard, London, 1879, 2d ed., 1890, is not equivalent to the French work.

available. These latter desiderata, while universal, apply with particular force to the United States and the New World, where our material is more homogeneous.

Finally, a matter of vital concern to Physical Anthropology is the continued augmentation and improvement of collections. It is requisite, particularly in this country, that our collections be supplemented in a systematic manner, and in all particulars. There are needed much additional osseous material, including all parts of the skeleton, for racial and other group studies; ample developmental series, on which may be determined racial and other peculiarities in all stages of growth; the largest possible acquisitions of skeletal remains from all periods of peoples known the longest to history, such as the Egyptians, Semites, Chinese, etc., for ascertaining the physical variations in different localities in known periods of time; large collections of brains, preserved by most approved and uniform methods, for the study of gross, minute, and chemical differences in that organ in definite groups of humanity; and substantial series of at least the skeletal parts and brains of the anthropoid and other apes for purposes of comparison. The existing material, as well as that to be added, should be cared for in the best possible manner with respect to identification, cleaning, repair, cataloguing, and preservation. A proper preservation of the skeletal remains is particularly important, as much of the material grows in value as time advances and region after region becomes exhausted of such remains. All these are necessities on the fulfilment of which further advance in Physical Anthropology depends directly. Other desirable objects, at least in our great museums, are series of specimens suitable for exhibition, for illustrating to the public the best authenticated evidences of man's evolution, at least, and the most generally interesting human variations; and we need also larger gatherings of photographs, as well as accurate casts and busts, and hair collections.

The above by no means exhausts what may be termed the internal needs and therefore aims of Physical Anthropology. There still remain the very important objects pertaining to the virile development and advance of teaching; the foundation of separate central institutes of Physical Anthropology for different countries, such as the École d'Anthropologie of Paris; the conservation of original, detailed data where they may be available for future use, etc. But these are largely matters of ultimate development of the branch, dependent on the progress realized along the lines before specified, hence their discussion may be deferred to another occasion.

This leads us to specific scientific aims of Physical Anthropology, which are innumerable. They extend from questions of pure science and natural philosophy to those of high practical utility, and from problems of local interest to those applying to all humanity. I shall pass briefly over the questions of a more general nature and conclude with those that are more especially American.

The paramount scientific object of Physical Anthropology is the gradual completion, in collaboration with the anatomist, the physiologist, and the chemist, of the study of the normal white man living under ordinary conditions. And our knowledge must not extend to the averages or mean conditions alone, but to the complete range of normal variation of every important feature of the human body, and to the laws governing their correlation. Such knowledge of the white race is eventually indispensable for anthropological comparisons. The goal, however, is still very distant, notwithstanding the results already accomplished. It is necessary to renew and to extend the investigations to every feature, every organ, every function of the white man, until these are known in every detail. The facility and value of all comparative work will increase in direct proportion to the degree of consummation of efforts in this direction. The choice of the white man for the standard is only a matter of most direct concern and convenience; the yellow-brown or the black man would serve equally well, if not better, were we of his blood and were he as readily available.

Another quite fundamental task of Physical Anthropology is to perfect, or aid in perfecting, the detailed knowledge of the structure, function, and, as far as possible, chemical composition of the primates, both living and fossil. This field of investigation is like the vestibule to the hall of man's natural history and is essential to the understanding of man's past and even present evolution. The remains of the fossil forms of the primates are unfortunately still few in number and very defective; nevertheless they are being gradually augmented, and the hope seems justified that in the not far distant future forms will be recovered that will be of as acute interest to the student of man's origin as the known remains of some of his earlier representatives. An intensive systematic search for such remains in Africa, Asia, and Malaysia is one of the most urgent scientific necessities.

The third great aim of our science is the perfection of knowledge of human phylogeny proper: knowledge, in other words, of the evolutionary changes and the variations in man's structure with respect to

time. This calls for a delicate, most thorough, and, so far as may be possible, an unbiased study of every human osteological specimen of geological antiquity, as well as that of ample series of the old remains of man of definitely known age; and of all the causes that may have been instrumental in the changes that led to and governed man's evolution. Research in connection with the bones of geological early man has been painstaking, but the specimens themselves are still relatively few in number and mostly very imperfect; while the study of man's variations and differentiation during the earlier parts of the period of which there is chronological knowledge and which is comprised within the last 8,000 years, is still almost in its infancy. When world conditions again become normal, the search for skeletal remains of early man will, it is strongly hoped, proceed with increasing vigor into new and promising areas, such as southeastern Asia, Asia Minor with the Arabian peninsula, and Africa. And it is hoped also that our archeological friends will no longer stand aloof, as so often in the past, but will collaborate with us to rescue not alone the evidences of man's activities but the precious skeletal remains encountered in their excavations of ancient historic sites. Such remains are capable of lending testimony for the solution of the most important problems of archeology, and, when properly correlated in point of time, as they can be in Egypt, Chaldea, and perhaps in Greece and other localities, they constitute material of the highest value to Physical Anthropology.

The next important object of Physical Anthropology is the continuous advance in the study of the more primitive human races and their subdivisions. What has already been accomplished in this field have been in large measure only the primary, the easiest steps; in fact we have not yet emerged here far above the stage of amateurism. In not a single instance can we say that we possess even a fairly complete record of any of the colored peoples. There are great territories in Asia, Africa, Oceania, and America, of whose populations our knowledge is hardly more than rudimentary; and there are many subdivisions of the white race itself which demand much more thorough investigation. We have more or less knowledge of the general features, and perhaps of the skulls, of many peoples, but we know little of their other physical characteristics, of the full, exact range of the normal oscillation of these characteristics, of parts of the skeleton other than the skull, of the brain and other internal organs, of the periods of development and decline, and of their normal functions generally, although all such

knowledge is indispensable to our progress. It may not be of special benefit to the more primitive groups themselves, but we must have it not alone for descriptive and statistical purposes, but for a proper understanding of the fundamental problems of our own race and of humanity in general. The more primitive groups of people are less mixed, less abnormal, less pathological, perhaps less aberrant than those of more civilized communities, hence observations thereon may reasonably be expected to reveal more readily and clearly the workings of natural laws that control man's cycle of life, his adaptations, his changes, and his evolution.

Associated with racial studies, but of more direct and serious concern to many nations, particularly the American, are investigations into the physical, physiological, and intellectual effects of racial mixtures on progeny. Mixture of colored races with the white are largely controllable by law and general enlightenment, and if found detrimental could be reduced to a minimum. In the United States we are confronted on the one side with the grave problem of mixture of white and negro, and on the other with that of white and Indian. We know something of the general results of such miscegenations, but in both cases the subject calls urgently for more thorough investigation. A question of perhaps even greater concern is that of the immigration of whites of every extraction. What do these diverse strains bring in the way of physical and intellectual endowments, and what in these respects are the results of their mixture with the native population? These questions can be answered only by adequate medical, psychological. and anthropometric studies of sufficiently large groups of the immigrants of each class, and by similar investigations on their progeny, both pure and where they have mixed with Americans of other extraction.

The anthropological study of the child and the adolescent is also far from finished, even in this country and in Europe, where it has received most attention. Among primitive peoples this field, as already mentioned, is not only of great importance but is still almost virginal. The white child in future must be studied not only individually and separately as hitherto, but also in connection with its brothers and sisters and together with its progenitors. It must be studied even before birth, in which direction fortunately substantial progress has lately been made in this country.[11] The earlier and the later

[11] Under Dr. Frank P. Mall, whose recent untimely death is a severe loss to American anatomy and anthropology.

children of the same parents will probably repay special attention, and the subject of both hereditary and acquired pathological influences on the development of individual children must receive careful consideration.

Next in sequence are studies concerning the numerous environmental groups of humanity—groups developed and continuing under extremes of elevations, climate and nourishment; or under the greatest specialization in clothing, food, occupation, or habits, that are liable to permanently affect the body or its functions. All such conditions are followed by functional and structural reactions and accommodations of the system, and it is to be determined how these ultimately affect the progeny. Learning the exact facts here is beset with many difficulties, yet is feasible and the results are bound to be of much practical and scientific utility.

A still further extension of anthropological studies includes the pathological groups of mankind—the alcoholics, epileptics, insane, idiots, perverts, and other defectives or degenerates, and also criminals. This part of anthropological research is already fairly well advanced, and with the help of medical men has accomplished much of benefit to society. But the aims of science, which are a complete knowledge of these classes, are still far from having been attained. Their realization depends to a large extent on a perfect understanding of the normal contingent of the human and particularly the white family.

Finally, the ultimate aim of Physical Anthropology is that it may, on the basis of accumulated knowledge and together with other branches of research, show the tendencies of the actual and future evolution of man, and aid in its possible regulation or improvement.

The growing science of eugenics will essentially become applied anthropology. Progress in this direction stipulates, besides our other work, intensive studies in human heredity and of the principles governing its modifications. It also stipulates the necessity of perceiving and formulating the true goals of mankind, physical and intellectual, for the two are inseparable, and then working toward their realization.

A few words in conclusion regarding some of the more special duties of Physical Anthropology in this country and in the western continent in general.

American students, so far as it may lie in their power, should contribute to knowledge concerning the white race at large and of other peoples outside of this continent. They have already contributed in no small way to the study of child growth and should not stop in this

direction. Close attention and coöperation should also be given in all investigations concerning special, environmental, and pathological groups of humanity. There are a number of problems, however, which to American anthropologists will always be of special interest. These are the appearance and antiquity of man in America; the composition and detailed characteristics, with their normal range of variation, of the indigenous race, including the Eskimo; the development of the negro element; and the results of admixture of whites with the negro and the Indian. Alongside these range themselves parallel problems affecting the insular possessions of the United States.

Many of the above propositions are of course largely for the future. They may be presented now in a more or less general form, but we of this generation hope at best to advance the work of preparation. While this is in progress our efforts in the direction of eugenics, though by no means useless, must remain more or less empirical and impotent; therefore care should be taken not to create premature and unwarranted expectations.

The writer can not conclude without calling attention to a particularly important phase of anthropological preparation. This refers to national anthropometric surveys. The very existence of nations depends on the conservation of the physical standards and soundness of their people, and to gauge these standards nothing could be so effective as proper, sufficiently comprehensive, anthropometric surveys, made at definite, say fifty-year, periods. The need of undertakings of this nature has been steadily growing in the minds of both scientific and public consciousness for many years, and has led to more or less extensive attempts, preparations, or proposals in that direction in France, Italy, Germany, India, England, Denmark, Scandinavia, and during the Civil War even in our own country. Had not the war intervened, we would possibly have had in operation before now in England and Germany national surveys on a comprehensive scale; and the time can not be far distant when a national anthropometric (and perhaps psychometric) survey, as regular and useful as that of a national census, will be one of the permanent establishments of each civilized country. Such a survey would show what each nation represents biologically and what its tendencies are in this respect; and it would show what grade in the nation, from the physical point of view, the various social, environmental, and occupational groups represent, and where they are tending. The data gathered by successive surveys of this kind would then serve as an index

of progress, stagnation, or deterioration of and within the nations and thus afford indications of vital importance to agencies for eugenics, and for legislation. In the United States and in other parts of this continent such surveys will also indicate, as nothing else could, the results of the various racial mixtures. May the establishment of such a survey in this country not be too long delayed, for we should lead in this as in other directions.

PHYSICAL ANTHROPOLOGY: ITS SCOPE AND AIMS; ITS HISTORY AND PRESENT STATUS IN AMERICA[1]

ALEŠ HRDLIČKA

B. History

INTRODUCTION

A historical account dealing with the development of Physical Anthropology in the western hemisphere, must of necessity, for the present, be limited geographically to the northern half of the continent and especially to that part of it under the jurisdiction of the United States, while chronologically it may conveniently stop before the actual era of the science and the work of its living representatives.

No special and comprehensive effort has hitherto been made in this direction, though as early as 1855, in his "Archæology of the United States,"[2] Samuel F. Haven gave an extended and very creditable account of the general opinions advanced to that time respecting the origin of population in the New World, and of the progress to that date of archeological and anthropological investigations in the United States. In 1898 Dr. George A. Dorsey wrote the "History of the Study of Anthropology at Harvard University,"[3] but he used the term "anthropology" in "its broadest, most general sense," and "somatology" received but slight mention; and in 1902 Dr. George G. MacCurdy wrote on the "Teaching of Anthropology in the United States."[4] There are no other publications on the subject, and the task before the writer was thus the more gratifying though also the more difficult one of research rather than of compilation.

The history of physical anthropology on this continent is relatively brief, dating back less than a century, yet preceding the beginnings of the same branch of science in most other countries, and antedating the

[1] Rewritten on the basis of writer's earlier communication on the subject, published in the *American Anthropologist*, (N.S.), XVI, Oct.–Dec. 1914.

[2] *Smithsonian Contributions to Knowledge*, Phila., 1855, 168.

[3] *Denison Quarterly*, Granville, O., 1898, IV, No. 2, 77–97.

[4] *Science*, 1902, XV, 211–216. A more recent communication on the subject of Professor MacCurdy will be referred to in the final section.

very use, in its modern sense, of the term anthropology. Also, though largely disconnected and individualistic, that is, represented by workers who arose quite incidentally, sometimes far apart and more or less independently of each other, it nevertheless presents a total record that is highly creditable and should be better known outside of this country.

It is almost wholly a history of anthropologists who were originally or at the same time medical men and especially anatomists or physiologists, and whose field of research was in a very large measure, though not exclusively, American; and it is further distinguished by the fact that its beginnings, as to both time and mode, can be almost exactly determined.

FORERUNNERS OF AMERICAN ANTHROPOLOGY

In a given country the history of any new branch of science would probably show, if it could be traced, a shorter or a longer prodromal period, occupied with the growth of interest in a new direction; then the beginnings of collections or assembling of data; and following that the first efforts at lectures, writing, and association in the new field. Back of this, however, there is, as a rule, a long, unconsciously cumulative epoch, the slow getting ready of the ground. The actual birth of a new science may be counted from the commencement of substantial research work in the new field, which in due time is followed by differentiation of concepts, advanced organization of forces and plans, standardization of procedures, and a gradual development of regular instruction and means of publication. Such was the course of physical anthropology in the United States and the rest of North America.

For the fertilization of the ground in this country nothing could have been more effective than the presence on the American continent of a race whose identity, composition, and origin were problems that from the date of its discovery interested the whole thinking world. To this toward the beginning of the nineteenth century was added the fact that the white man's contact with the Indian in North America was becoming extensive, and the need of knowing the race better physically as well as otherwise, was felt with growing intensity. Good evidence of this feeling can be seen in the excellent instruction given in 1804 by President Jefferson to Lewis and Clark, for their memorable expedition to the sources of the Missouri. Besides other things they were to look into the "moral and physical circumstances which distinguish the Indians encountered from the tribes we know"[5] and the

[5] See *History of the Expedition under the Command of Lewis and Clark*, etc., by Elliott Coues, 4 vols., N. Y. 1893.

results of this expedition helped greatly to further stimulate the universal interest in the Indian. An equally marked influence in this direction was due to a growing acquaintance with the multitude of mounds in the Ohio Valley and adjoining regions on one hand, and with the striking Peruvian, Mexican, and Central American Indian remains on the other.

Added to the above factors at home, came potent influences from abroad. Contributions to the natural history, races, and variation of man were published by Linnæus, Buffon, and Cuvier, and especially by Blumenbach[6] and Prichard.[7] In 1789 there was organized at Paris, the *Musée d'Histoire naturelle*, which eventually in its scope comprised also man; in 1800 there came into existence in Paris, the Society of Students of Man (*Société des observateurs de l'homme*), which, although short-lived, pointed to a new sphere of investigations of great interest; and before many years had passed the early, physiological, highly stimulating "phrenology" began to call attention to the importance of the study of the brain and skull.

As the first more tangible result of these influences in North America we see the incorporation, in 1812, at Worcester, Mass., of The American Antiquarian Society, with the chief object of "collecting and preserving the material for a study of American history and antiquities."[8] We learn that, "in the early days of the Society one of the prominent features of its work was the collection of anthropological specimens;" and we find that the first two volumes of the Transactions of this Society are devoted to the American Indian and his remains.[9]

The year 1814 marks the beginning in Boston of The Linnean Society, the predecessor of the Boston Society of Natural History (1830–); but there is no evidence that the study of man derived any special stimulus through the activities of this organization. Shortly thereafter, however, a small nucleus for anthropologic research takes form through the labors of Prof. John C. Warren, the eminent anatomist and surgeon and future founder of the present Warren Anatomical

[6] *Decades craniorum*, 1790–1828 (1873); *De generis humani*, etc., 1795 (3d ed.).

[7] *Researches into the Physical History of Mankind*, 1813 (1st ed.).

[8] *Transactions American Antiquarian Society*, Worcester, Mass., 1909, 32 pp.

[9] The first volume, published in 1820, contains Atwater's "Description of the antiquities of the Ohio and other historical states;" Hennepin's "Discovery of the Mississippi;" Johnston's "Indian tribes of Ohio;" and Sheldon's "Account of the Caribs of the Antilles." Vol. II, 1836, contains Gallatin's "Indian tribes of North America," and Daniel Gookin's "Historical Account of the Christian Indians of New England."

Museum of Harvard University. Inspired evidently by Blumenbach's works, Professor Warren began to collect and examine skulls of different races, and in 1822 he published an *Account of the Crania of some of the Aborigines of the United States*,[10] the first publication in this field on the continent. This publication, while of no permanent value scientifically, and while subscribing to the early error that the "mound-builders" were "a different people from the aborigines found here by our ancestors," is nevertheless remarkable for the systematic, technical descriptions of the specimens. In this respect it might well have served as a good example to some later writers on the subject.

A year before the appearance of his paper on American crania, Professor Warren published *A Description of an Egyptian Mummy*,[11] and an address by him on American crania, given before the British Association, is quoted in the *Boston Medical and Surgical Journal* (XVII, 1838, 249–253), but evidently his preoccupations were such that he could not give the new field of research sufficient attention. That he did not lose interest in the study of human crania is evident from the fact that in 1837 he engaged no less a student than Henry R. Schoolcraft to collect for him Indian skulls. Owing to various difficulties, however, the gathering of the desired material was interfered with, so that the resulting collection was not very important. The material was eventually transferred to the Warren Museum.

In the thirties, collection and study of human skulls received great impetus in this country through the establishment at Boston and Washington of phrenological societies, in which became interested at that time many physicians and other men of science. In 1835 the Boston Phrenological Society published a catalogue of specimens belonging to the Society and derived mainly from the collections "of the late Dr. Spurzheim and J. D. Holm," embracing four hundred and sixteen entries, among which more than a hundred racial skulls or casts of skulls.

Such was, in very brief, the preparatory period of physical anthropology in this country, and we can now approach the more effective beginnings of this branch of research.

[10] Published as part H of the Appendix to his *Comparative View of the Sensorial and Nervous Systems in Man and Animals*, Boston, 1822, 129–144, pls. V–VIII.

[11] Pamphlet, 1821; later he gave also "An Account of the Siamese Twin Brothers," *Amer. Med. Jour.*, Med. Sciences, V, 253.

THE BEGINNINGS OF AMERICAN ANTHROPOLOGY—SAMUEL G. MORTON

Physical Anthropology in the United States, speaking strictly, begins with Samuel G. Morton, in Philadelphia, in 1830.

Morton, who was born in Philadelphia, January 26, 1799, received the degree of M.D. at the Medical College of the University of Pennsylvania in 1820 and from the Medical School of the University of Edinburgh three years later.[12] In 1826 he began to practice medicine in Philadelphia and soon after engaged in private instruction in medicine and anatomy. Even before this, however, he became a member of the Academy of Natural Sciences of Philadelphia, took active interest in its collections, which he helped to classify and arrange, and became active in several branches of natural science, particularly paleontology. During these years, as anatomist, he also became interested, through the writings of Lawrence, Virey, Bory de St. Vincent, Gall, and Combe, on the one hand, and through reading the publications of such American authors as Dr. Barton, Professor Caldwell, Dr. J. C. Warren, Professor Gibson, Dr. B. H. Coates, and Dr. M'Culloh,[13] on the other, in *comparative* human anatomy, in phrenology (which doubtless seemed at that time to open a most promising line of research), and in questions relating to the origin, types and racial affiliations of the American Indians.

According to J. Aitken Meigs, "craniographic" researches were begun by Morton two years after the completion of Blumenbach's *Decades craniorum*. According to Morton himself, however, the beginning of his actual work in anthropology is related to have occurred as follows.[14] "Having had occasion, in the summer of 1830, to deliver an introductory lecture to a course in Anatomy, I chose for my subject: The different forms of the skull, as exhibited in the Five Races of Men. Strange to say, I could neither buy nor borrow a cranium of each of these races; and I finished my discourse without showing either the Mongolian or the Malay. Forcibly impressed with this great deficiency in a most important branch of science, I at once resolved to make a collection for myself." The results of this resolution were that be-

[12] Grant, Wm. R., *Lecture introductory to a course on Anatomy and Physiology in the Med. Dept. of Pennsylvania College, delivered October 13, 1851;* 8°, Phila., 1852, 1–16. Meigs, Charles D., M.D., *A memoir of Samuel G. Morton, M.D., read Nov. 6, 1851*, published Phila., 1851, 8°, 1–48.

[13] *Crania Americana*, preface, et seq.

[14] Morton, S. G., Account of a Craniological Collection, *Trans. Amer. Ethnolog. Soc.*, N. Y., 1848, II, 217–218.

tween 1830 and 1851, the latter the year of his death, Morton gathered no less than 968 racial crania, which, with 67 additional specimens that came soon after his death, constituted by far the largest and most valuable collection of anthropological materials then in existence.

With the augmentation of his collection grew evidently also Morton's interest in craniological research and in anthropology in general, leading eventually, with such additional stimuli as were furnished by the writings of Prichard, Lawrence, Humboldt, and possibly Anders Retzius, to active personal investigations in these lines. Finding an efficient helping hand in John S. Phillips, Esq., a much interested and ingenious member of the Academy, Morton undertook the large task of measuring and describing his material, and the American collections received first attention. A very sensible schedule of measurements was formulated on the imperfect basis then extant; instruments where insufficient or lacking were improved or invented, and after "some years of toil and anxiety" sufficient data were gathered and excellent illustrations provided for an important publication.

In 1839 Morton was appointed Professor of Anatomy in Pennsylvania Medical College, and in the same year his truly monumental work for that time, *Crania Americana*, appeared, a volume not financed by any publisher or institution, but undertaken by the author with the assured support of only fifteen subscribers!

This first and largest work of Morton makes manifest some of the defects of the early period in anthropology; it includes a chapter on phrenology, though it is the physiological phrenology of Morton's time and has no trace of the charlatanism later associated with the name; but these defects are slight when contrasted with the large bulk of astonishingly good work and the number of sound conclusions. One wonders at the nearness with which the measurements employed by Morton correspond with later and even present-day measurements in that line, and at the soberness and clear-sightedness of his deductions. Concerning phrenology, it is evident that Morton's interest in that branch was not that of a believer or promoter, but rather that of a friendly and hopeful investigator.[15] As to the lithographic illustrations of the work, they have not been excelled since in beauty and accuracy.

Morton's principal aims in preparing and publishing the *Crania Americana* were, in his own words, "to give accurate delineations of

[15] See prologue by John S. Phillips, Esq., in *Crania Americana.*

the skulls" representing as many Indian nations, from all parts of the American continent, as he could bring together in his collection; to show the position of the American crania with reference to those of other races; and to determine "by the evidence of osteological facts, whether the American aborigines of all epochs have belonged to one race or to a plurality of races." But thus early Morton gave attention also to the artificial deformation of skulls, and especially to the determination of the internal cranial capacity in various races, taking cognizance not only of the entire skull cavity but of its main subdivisions as well. Moreover he presented, in 62 pages of his work, an excellent review of the contemporary anthropological knowledge of peoples in all parts of the world, a summary which shows good discrimination and much erudition.

The craniometric methods of Morton (and Phillips) call for special note. Not counting the more complex determinations of the facial angle and internal capacity, Morton took on each skull ten measurements, and of these the most important six were measured from precisely the same landmarks and in the same way as they are taken today under the recent Monaco agreement, though Morton was not remembered at that convention. These measurements and the manner in which they were made are, in the words of Morton[16] himself, as follows:

"The *longitudinal diameter*, measured from the most prominent part of the os frontis, between the superciliary ridges, to the extreme end of the occiput.

"The *parietal diameter*, measured between the most distant points of the parietal bones. . . .

"The *vertical diameter*, measured from the fossa between the condyles of the occiput bone,[17] to the top of the skull.

"The *occipito-frontal arch*, measured by a tape over the surface of the cranium, from the posterior margin of the foramen magnum to the suture which connects the os frontis with the bones of the nose.

"The *horizontal periphery*, measured by passing a tape around the cranium so as to touch the os frontis immediately above the superciliary ridges, and the most prominent part of the occipital bone.

"The *zygomatic diameter* is the distance, in a right line, between the most prominent points of the zygomæ."

The terms used in describing the measurements are perhaps not always quite as specific as those which would be employed today, eight decades later, but the meaning is unmistakably identical. The four

[16] *Crania Americana*, 249–250.

[17] The present *basion*.

other measurements, which now are no more or but seldom employed, were the *frontal diameter*, taken between the anterior-inferior angles of the parietal bones, the *inter-mastoid arc* and *line*, and the *joint length of the face and vault.*

The *facial angle* was measured directly by an improved *facial goniometer*, while for obtaining the *internal capacity* of the skull a method was invented which, though seldom if ever duly credited, served and still serves as the basis of all subsequent procedures for obtaining this important determination with dry substances. Morton's description of the method, which well deserves to be quoted in full, is as follows:[18]

"*Internal Capacity.*—An ingenious mode of taking this measurement was devised by Mr. Phillips, viz: a tin cylinder was provided about two inches and three-fourths in diameter, and two feet two inches high, standing on a foot, and banded with swelled hoops about two inches apart, and firmly soldered, to prevent accidental flattening.—A glass tube hermetically sealed at one end, was cut off so as to hold exactly five cubic inches of water by weight, at 60° Fahrenheit. A float of light wood, well varnished, two and a quarter inches in diameter, with a slender rod of the same material fixed in its centre, was dropped into the tin cylinder; then five cubic inches of water, measured in the glass tube, were poured into the cylinder, and the point at which the rod on the float stood above the top of the cylinder, was marked with the edge of a file laid across its top; and the successive graduations on the float-rod, indicating five cubic inches each, were obtained by pouring five cubic inches from the glass tube *gradatim* and marking each rise on the float-rod. The gradations thus ascertained, were transferred to a mahogany rod fitted with a flat foot, and then subdivided, with compasses, for the cubic inches and parts. In order to measure the capacity of a cranium, the foramina were first stopped with cotton, and the cavity was then filled with *white pepper seed* poured into the foramen magnum until it reached the surface, and pressed down with the finger until the skull would receive no more. The contents were then transferred to the tin cylinder, which was well shaken in order to pack the seed. The mahogany rod being then dropped down with its foot resting on the seed, the capacity of the cranium in cubic inches is at once read off on it."

The most important scientific conclusions arrived at by Morton in his studies of American crania and their comparison with similar material from other parts of the world, conclusions which he held strongly to the end of his life, were that: (1) "The American nations, excepting the Polar tribes (Eskimo), were of one Race and one Species, but of two great Families (Toltecan and Barbarous), which resemble each other in physical, but differ in intellectual character;" and that: (2) "The

[18] *Crania Americana*, 253.

cranial remains discovered in the Mounds, from Peru to Wisconsin, belong to the same race (the Indian), and probably to the Toltecan family."[19] These conclusions subverted the numerous loosely formed but commonly held theories respecting the racial complexity of the American natives, as well as those of a racial separateness of the "Mound-builders" from the rest of the American Indians.

Besides this, Morton's work must have proved highly useful as a contemporary compendium of anthropological knowledge; it established the main proportions of the skulls of many American tribes; it gave comparisons of skull capacity in series of skulls representing the five human races of Blumenbach's classification; it shed considerable light on the subject of artificial deformation of the head among the American natives; and it gave for the first time excellent illustrations, both plates and figures, of many American crania, which could safely be used in comparative work by investigators to whom original American skulls were not accessible.

The few erroneous statements and conclusion included were due entirely either to imperfect contemporaneous knowledge in anthropology, or to inadequate material. The latter deficiency, for example, was directly responsible for Morton's opinion, supported by ten skulls which he called "Mongolian" but which were in reality only those of Chinese and Eskimo, that the American race differed essentially from all others, not excepting the Mongolian.[20] The terms "Toltecan" and "Barbarous" were also, we now know, misnomers, and the classification of all the Indians into these two families was erroneous, though when it was made it served a good purpose as a basis for further investigation.

Morton intended to follow the *Crania Americana* with a "supplementary volume," in which to "extend and revise both the Anatomical and Phrenological tables, and to give basal views of at least a part of the crania delineated;" also to "measure the anterior and posterior chambers of the skull in the four exotic races of man, in order to institute a comparison between them respectively, and between these and those of the American Race."[21] This was never accomplished. Nevertheless the remainder of Morton's life was largely devoted to anthropology, the result being the publication of more than twenty anthropological papers on subjects relating in the main, but by no means

[19] *Crania Americana*, 260; also 62 et seq.
[20] Ibid., 260.
[21] *Crania Americana*, preface v.

exclusively, to America. The most important of these publications, and one that compares favorably in clearness of presentation, and the validity and advanced nature of its conclusions, with the *Crania Americana*, was his *Crania Ægyptiaca*, published in 1844 and dealing with one hundred old and thirty-seven modern Egyptian skulls, procured for Morton by a United States consul at Cairo and subsequently himself an anthropological author of note—George R. Gliddon. Without entering into details about the work, it will be sufficient to say that Morton recognized definitely that "the valley of the Nile, both in Egypt and in Nubia, was originally peopled by a branch of the Caucasian race;" and that "the present Fellahs are the lineal and least mentioned descendants of the ancient Eyptians; the latter being collaterally represented by the Tuaregs, Kabyles, Siwahs, and other remains of the Lybian family of nations."

Of his remaining papers the more noteworthy were those on a "Method of Measuring Cranial Capacity;" "On Hybridity of Animals;" on "The Size of the Brain in Various Races and Families of Man;" and on the "Physical Type of the American Indians."

Following is Morton's complete anthropologic bibliography; besides these works, however, he published an excellent textbook on *Human Anatomy*.

Crania Americana. 4°. Phila., 1839.

Method of measuring cranial capacity. Proc. Acad. Nat. Sci. Phila., 1841, I, 7–8.

Mexican Crania (Otomi, Chechemec, Tlascalan, Aztec). Proc. Acad. Nat. Sci. Phila., 1841, I, 50–51.

Cranial sutures. Proc. Acad. Nat. Sci. Phila., 1841, I, 68–69.

Pigmy "race" of Mississippi valley. Proc. Acad. Nat. Sci. Phila., 1841, I, 215–216.

Negro skulls, capacity. Proc. Acad. Nat. Sci. Phila., 1841, I, 135.

Yucatan (Ticul) skeleton. Proc. Acad. Nat. Sci. Phila., 1842, I, 203–204.

Observations on Egyptian ethnography, derived from anatomy, history, and the monuments. Trans. Amer. Philos. Soc. Phila., 1843, IX, 93–159.

Crania Ægyptiaca. 4°, Phila., 1844.

Observations on a second series of ancient Egyptian crania. Proc. Acad. Nat. Sci. Phila., 1844, II, 122–126.

Observations on the measurements of the internal capacity of the crania deposited [by Morton] this evening. Proc. Acad. Nat. Sci. Phila., 1844, II, 168.

The skull of a Hottentot. Proc. Acad. Nat. Sci. Phila., 1844, II, 64–65.

Two ancient Peruvian heads from Atacama, deformed. Proc. Acad. Nat. Sci. Phila., 1845, II, 274.

Skull of a Congo negro. Proc. Acad. Nat. Sci. Phila., 1845, II, 232–233.

Skulls of New Hollanders (Australians). Proc. Acad. Nat. Sci. Phila., 1845, II, 292–293.

Remarks on an Indian cranium found near Richmond, on the Delaware, and on a Chenook mummy. Proc. Acad. Nat. Sci. Phila., 1847, III, 330.

On an aboriginal cranium obtained by Dr. Davis and Mr. Squier from a mound near Chillicothe, Ohio. Proc. Acad. Nat. Sci. Phila., 1847, III, 212–213.

Skeletal remains from Arica, Peru. Proc. Acad. Nat. Sci. Phila., 1848, III, 39–40.

On hybridity of animals, considered in reference to the question of the unity of the human species. Proc. Acad. Nat. Sci. Phila., 1848, III, 118–121.

On the position of the ear in the ancient Egyptians. Proc. Acad. Nat. Sci. Phila., 1848, III, 70.

The catalogue of skulls of man and the inferior animals, in the collection of Samuel G. Morton, M.D., Phila., 1849 (with two subsequent editions).

Observations on the size of the brain in various races and families of man. Proc. Acad. Nat. Sci. Phila., 1850, IV, 221–224.

Four skulls of Shoshonee Indians. Proc. Acad. Nat. Sci. Phila., 1850, IV, 75–76.

Ancient Peruvian crania from Pisco. Proc. Acad. Nat. Sci. Phila., 1850, IV, 39.

Observations of a Hottentot boy. Proc. Acad. Nat. Sci. Phila., 1850, IV, 5–6.

Physical type of the American Indians. In Schoolcraft, Indian Tribes, Phila., 1852, II, 316–330. Unity of the human race, ibid, III, 374–375.

EFFECTS OF MORTON'S WORK

Under Morton's stimulus and with his coöperation, physical anthropology of the American Indian received attention in a number of important ethnological and archeological works published before or soon after his decease. Thus the first scientific memoir published by the Smithsonian Institution, the highly creditable Squier and Davis's "Ancient Monuments of the Mississippi Valley,"[22] included five pages of text and two excellent plates on the "Crania from the Mounds." The main part of this report was by Morton himself. One skull only is described, but it was a very good, undeformed or but very slightly deformed specimen, derived from an ancient mound in Scioto valley, Ohio. For comparison there are given measurements of 308 mounds, "tumuli," and Indian crania[23] of different ages and from different parts of the North American continent and Peru. Curiously, and against the previously expressed conclusion of Morton, Squier and Davis assumed in this connection that there had existed a special "race of the mounds," the skull described "belonging incontestably to an individual of that race." Regarding skeletal remains from the mounds in general, how-

[22] *Smithsonian Contributions to Knowledge*, N. Y., 1848, I, 288–292, pl. XLVII–XLVIII.

[23] Mainly from Morton's *Crania Americana*.

ever, the authors well recognized that these were "of different eras," the superficial burials being comparatively late and to be ascribed to the Indian tribes in occupancy of the country at the period of its discovery.

In the same year (1848), appeared the second volume of the *Transactions of the American Ethnological Society*, which contains important ethnological contributions and maps by Hale and Gallatin, in an article on the "Indians of North America." Neither of these contributions added directly to physical anthropology, but both contained valuable data on the early distribution of the North American Indians, on the population of some of the tribes, and on their environment. There are notes on the physical appearance of the Indians of various types,[24] but these are quite imperfect. In the same volume also appears Morton's "Account of a craniological collection, with remarks on the classification of some families of the human race."[25] This brief contribution is interesting partly because in it Morton shows in a few words how he was led to the collection and study of American crania, and partly because he reiterates his conviction as to the racial unity of all the American nations, barring the Eskimo.[26]

Even more important than both of the works heretofore mentioned in this section, was the great encyclopedia of knowledge concerning the American Indian, prepared by a special provision of the United States Congress under the auspices of the Bureau of Indian Affairs, by Henry R. Schoolcraft, in collaboration with a number of other authors, and published between 1851 and 1857.[27] This work gave much reliable information on the geographic distribution of the Indian tribes in North America; on their migration; on family conditions of the Indian, including birth and death; on the intellectual capacity of the Indian; and on the statistics and population of the tribes. Besides this, it included

[24] Particularly in Hale, chapter Ethnology, 5–8.

[25] Pp. 217–222.

[26] P. 218: "The anatomical facts considered in conjunction with every other species of evidence to which I have had access, lead me to regard all the American nations, except the Esquimaux, as people of one great race or group. From Cape Horn to Canada, from ocean to ocean, they present a common type of physical organization, and a not less remarkable similarity of moral and mental endowments."

[27] Complete title: *Historical and Statistical Information respecting the History, Condition and Prospects of the Indian Tribes of the United States, collected and prepared under the direction of the Bureau of Indian Affairs: per act of Congress of March 3d, 1847*, by Henry R. Schoolcraft, LL.D. 6 vols., 4°, Phila., 1851–1857.

a series of articles dealing directly with the physical anthropology of the native. These comprised the "Essay on the physical characteristics of the Indian," by Samuel G. Morton (II, 315–330); "Admeasurements of the crania of the principal groups of Indians of the United States," by J. S. Phillips (II, 331–335); "Examination and distribution of the hair of the head of the North American Indian," by Peter A. Browne, LL.D. (III, 375–393); "Considerations on the distinctive characteristics of the American aboriginal tribes," by Dr. Samuel Forrey (IV, 354–365); together with "Unity of the human race" (373–375), "Remarks on the means of obtaining information to advance the inquiry into the physical type of the Indian" (IV, 345–353), and "The aboriginal features and physiognomy" (V, 287–292), by Schoolcraft himself.

Meanwhile also a number of publications appeared in the United States bearing on physical anthropology, which were incited not so much by Morton as by Lawrence (*Lectures on the Natural History of Man*) and especially Prichard (*Natural History of Mankind*), in England. Three volumes belonging to this category were *The Races of Man*, by Dr. Charles Pickering (*Publications of the United States Exploring Expedition*, 4°, Boston, 1848); the *Natural History of Man*, by Wm. N. F. Van Amringe (8°, New York, 1848); and *The Natural History of the Human Species*, by Lieutenant Colonel Charles Hamilton Smith (8°, Boston, 1851).

These volumes, as seen in part from their titles, deal comprehensively and more or less philosophically with mankind as a whole. The two more valuable ones were those of Smith and Pickering, both presenting good summaries of contemporaneous knowledge of the subjects with which they deal. Van Amringe wrote on the basis of biblical data; nevertheless his book also contained many a good thought. The works of both Smith and Pickering were published later in new editions, the former in 1859 (Boston), with additions by Dr. S. Kneeland; and the latter in 1854 (London), with *An Anatomical Synopsis of the Natural History of Man*, by Dr. John Charles Hall.

The influence of these publications was more of a general nature. They were largely read, educating and influencing the public mind on a subject which was then claiming a large share of the attention of all thoughtful minds, without actually adding much to existing knowledge or stimulating intensive research.

During the latter part of the first and the early part of the second half of the nineteenth century, there were several other important occurrences the results of which served to enhance interest in anthro-

pology in this country, particularly in that of the American aborigines. These were the numerous Government exploring expeditions to the far Northwest, West, and Southwest, under Wilkes (1838–'42), Frémont (1842–'44), Emory (1846–'47), Stansbury (1849), and others; and the extensive Pacific Railroad Surveys of 1853–'54, comprising the explorations of Parke, Whipple, Pope, Stephens, Williamson, and their companions. They helped in preparing the ground for the eventual establishment of the Bureau of American Ethnology.

MORTON'S SUCCESSORS—JOSEPH LEIDY AND J. AITKEN MEIGS

From what precedes it is plain that Morton may justly and with pride be termed the father of American anthropology; yet it must be noted with regret that, like others later on, he was a father who left many friends to the science and even followers, but no real progeny, no disciples who would continue his work as their special or life vocation.

The collection of crania which Morton assembled was purchased from his executors, for the sum of $4,000, by forty-two gentlemen of Philadelphia and presented to The Academy of Natural Sciences in that city, where it rests a lonesome relic to the present day; the Academy, whether owing to lack of scholars or for other reasons, failing to provide for further research in connection with the precious material, or for systematic accessions. What might not the Academy have been to American anthropology had circumstances been different! However, the time was doubtless not quite ripe.

As it was, two men were approached with a view to continuing Morton's work, either of whom would have made a thorough success of the undertaking had he been in a position to devote himself exclusively to anthropology. They were Joseph Leidy and J. Aitken Meigs. According to Leidy[28] "after the death of Dr. Morton, it was proposed to me to take up the investigation of the cranial characteristics of the human races, where he had left it, which I omitted, not from a want of interest in ethnographic science, but because other studies occupied my time. Having, as Curator of the Academy of Natural Sciences, the charge of Dr. Morton's extensive cabinet of human crania, I confided the undertaking to Dr. Meigs. . . ."

Dr. J. Aitken Meigs, eventually professor of climatology, physiology, and the institutes of medicine in several colleges of Philadelphia

[28] In Nott and Gliddon's *Indigenous Races of the Earth*, 8°. Phila., 1857, p. xvi.

and an indefatigable worker,[29] endeavored, so far as his medical preoccupations allowed, to pick up the threads where broken by Morton's death, and in the course of sixteen years (1850–1866) contributed a number of good papers to anthropology. The most important of these were "The Cranial Characteristics of the Races of Men," in Nott and Gliddon (1857), with extensive bibliography; the *Catalogue of Human Crania in the Collection of the Academy of Natural Sciences of Philadelphia* (1857), a continuation of Morton's Catalogue, which meanwhile had reached the third edition; the *Observations on the Occiput in Various Races* (1860); the *Hints to Craniographers* (1858), which includes the first comprehensive data on other cranial collections then in existence, both here and in Europe; and the *Mensuration of the Human Skull* (1861), which, besides referring to much of the earlier history of anthropometry, gives clear directions for 48 cranial measurements and determinations.

In appraising Meigs' anthropological work as a whole, it is felt with regret that he was not all to the science that he could and should have been. His writings show much knowledge of the field, minute application and considerable erudition, but they do not go far enough; they are only good by-products of a mind preoccupied in other though more or less related directions. Meigs also like Morton left no disciples.

The bibliography of his anthropological contributions follows:

Description of a deformed, fragmentary human skull, found in an ancient quarry-cave at Jerusalem; with an attempt to determine by its configuration alone the ethnical type to which it belongs. Proc. Acad. Nat. Sci. Phila., 1850, XI, 262–280.

On Dr. Morton's collection of human crania. Proc. Acad. Nat. Sci. Phila., 1855, 420.

Catalogue of human crania in the collection of the Academy of Natural Sciences of Philadelphia. Proc. Acad. Nat. Sci. Phila., 1856, Suppl.

The cranial characteristics of the races of men. In Nott and Gliddon's Indigenous Races of the Earth, 8°, Phila., 1857, 203–352.

Hints to craniographers—upon the importance and feasibility of establishing some uniform system by which the collection and promulgation of craniological statistics, and the exchange of duplicate crania, may be provided. 8°, 1–6, Phila. 1858 (?), with Proc. Acad. Nat. Sci. Phila., for 1858, and separately.

Observations upon the form of the occiput in the various races of men. Proc. Acad. Nat. Sci. Phila., 1860, XII, 397–415.

The mensuration of the human skull. North-Amer. Med. Chirurg. Review, Sept., 1861, 837–861.

[29] Born at Philadelphia, 1829, died 1879. Biography by Geo. Hamilton in *Trans. Med. Soc. Pa.*, Phila., 1880, 1–22. For other biographic notices see under Meigs in *Catalogue of the Library of the Surgeon General, U. S. A.*

Observations upon the cranial forms of the American aborigines, based upon specimens contained in the collection of the Academy of Natural Sciences of Phila. Proc. Acad. Nat. Sci. Phila., 1866, 197.

Description of a human skull in the collections of the Smithsonian Institution (from Rock Bluff, Ill.), Smithsonian Report for 1867, 412–414.

Meanwhile Dr. Joseph Leidy (1823–'91), later Professor of Anatomy in the University of Pennsylvania, Curator of the Academy of Natural Sciences, and an eminent naturalist, did not wholly abandon his interest in anthropology. As will be seen from the appended list of his writings he published a number of smaller contributions of more or less direct interest to the science, all of which bear the mark of an able and conscientious observer. Among other things those of us who are more closely interested in human antiquity owe to him one of the earliest and clearest statements regarding the unreliability of fossilization of bones as a criterion of antiquity. His words on this point, which might well be borne in mind by some of our present paleontologists, are as follows:[30] "Bones of recent animals, when introduced into later deposits, may in many cases very soon assume the condition of the fossils belonging to those deposits. Fossilization, petrification, or lapidification is no positive indication of the relative age of the organic remains. . . ."

As well known, it was Professor Leidy to whom the fossil pelvic bone of Natchez, and the variously petrified human bones from the west coast of Florida, were submitted for examination, which resulted in the opinion that they were not necessarily of any great antiquity, though he was inclined to believe that the native American had "witnessed the declining existence of the Mastodon and Megalonyx" on this continent, and that man may have been a companion in America of the latest prehistoric horse.

Among the more than five hundred published contributions to natural science by Leidy, the following are of interest to anthropology:

On the cranium of a New Hollander. Journ. & Proc. Acad. Nat. Sci. Phila., 1847, 217.

On the hair of a Hottentot boy. Jour. & Proc. Acad. Nat. Sci. Phila., 1848, 7.

Observations on the existence of the intermaxillary bone in the embryo of the human subject. Proc. Acad. Nat. Sci. Phila., 1848–1849, IV, 145–147.

On a so-called fossil man. Proc. Acad. Nat. Sci. Phila., 1855, 340.

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[30] In his article on human paleontology, Nott and Gliddon's *Indigenous Races of the Earth*, 1867, p. XVIII, footnote.

(On human paleontology.) In Nott and Gliddon's Indigenous Races of the Earth, 8°, Phila., 1857, xvi–xix.
On an acephalous child. Proc. Acad. Nat. Sci. Phila., 1858, 8.
On blood crystals. Proc. Acad. Nat. Sci. Phila., 1858, Biol. 9.
On the cause of monstrosities. Proc. Acad. Nat. Sci. Phila., 1858, Biol. 9.
On sections of the human cranium. Proc. Acad. Nat. Sci. Phila., 1858, Biol. 10.
Exhibition of the lower jaw of an aged man. Proc. Acad. Nat. Sci. Phila., 1870, 133.
On the reversed viscera of a human subject. Proc. Acad. Nat. Sci. Phila., 1870, 134.
Anomalies of the human skull. Proc. Acad. Nat. Sci. Phila., 1888, 273.
Notice of some fossil human bones. Trans. Wagner Free Institute of Science, Phila., 1889, ii, 9–12.

J. C. NOTT AND GEORGE R. GLIDDON

Besides J. Aitken Meigs and Joseph Leidy, there were two other men who were closely associated with Morton in his anthropological work and who subsequently endeavored to fill at least a part of the void left by his death. They were Dr. J. C. Nott, of Mobile, Alabama, and Mr. George R. Gliddon of Philadelphia, formerly U. S. Consul at Cairo and a large contributor to Morton's cranial collections.

Aided in the beginning by Morton himself and supplementing their work by contributions from Agassiz, Leidy, Meigs, Usher, Patterson, and others, Nott and Gliddon published in 1854 a volume on the *Type of Mankind*, which by 1871 reached the tenth edition; and in 1857 this was followed by a volume on the *Indigenous Races of the Earth*, which also had a large circulation.

The scope of these works, which exercised considerable influence on the public mind of their time, can best be appreciated from an enumeration of their main sections, which were:

"The Types of Mankind"

Memoir of Samuel George Morton.
The natural provinces of the animal world and their relation to the different types of man, by Prof. L. Agassiz.
Geographical distribution of animals and the races of man.
Types of mankind.
Excerpts from Morton's unedited manuscripts on "The Size of the Brain in various Races and Families of Man;" and on "Origin of the Human Species."
Geology and paleontology in connection with human origins, by W. Usher, M.D.
Hybridity of animals viewed in connection with the natural history of mankind; and comparative anatomy of races, by J. C. Nott, M.D.

"INDIGENOUS RACES OF THE EARTH"

Contribution by Leidy on "Human Paleontology;" with a letter on "Primitive Diversity of the Races of Man" and "The Reliability of Philological Evidence," by L. Agassiz.
Distribution and classification of tongues, by Alfred Maury.
Iconographic researches on human races and their art, by Francis Pulszky.
The cranial characteristics of the races of man, by J. Arthur Meigs.
Acclimation; or the comparative influence of climate and endemic and epidemic diseases on the races of man, by J. C. Nott.
The Monogenist and the Poligenist, by George R. Gliddon.

It is to be regretted that these publications, and particularly the *Types of Mankind,* were strongly attached to the biblical traditions, more than three hundred pages of the later volume being devoted to efforts at harmonizing the results of the rising science with the biblical Genesis.

Another serious defect of the two works was a dearth of data based on actual field or laboratory research. They bore on the whole the stamp of popular science rather than that of reports on scientific investigation. So they were evidently also received, and on that basis reached their extensive circulation. They have not advanced or benefited physical anthropology in this country to any material extent, and are now but seldom referred to.

ANTHROPOLOGY IN BOSTON

GEORGE PEABODY; JEFFRIES WYMAN

It now becomes necessary to leave Philadelphia for a while and return to Boston. Here, in 1866, takes place an event which from the beginning is destined to have a marked influence on the development of Physical Anthropology in this country. This is the foundation of the Peabody Museum of American Archeology and Ethnology, together with the Peabody Professorship in the same subjects, at the Harvard University,[31] by George Peabody, the great American philanthropist of that time.

[31] In a letter transmitting the gift to the future Trustees of the Museum we read as follows: "Accompanying this letter, I inclose an instrument giving to you one hundred and fifty thousand dollars ($150,000), in trust for the foundation and maintenance of a Museum and Professorship of American Archaeology and Ethnology in connection with Harvard University . . . Aside from the provisions of the instrument of gift, I leave in your hands the details and management

Jeffries Wyman is appointed the first Curator of the Museum, and the beginnings of its collections are thus described in his first report:

"On the 9th of November, 1866, a collection of various objects pertaining to the purposes of this Museum was begun, and temporarily deposited in one of the cases of the Museum of Comparative Anatomy, in Boylston Hall. The collection consisted of crania and bones of North-American Indians, a few casts of crania of other races, several kinds of stone implements, and a few articles of pottery,—in all, about fifty specimens. Of these, about one-half belonged to Harvard College, and, with the consent of the President, were transferred to this Museum; the others were from the collections of the Curator."[32]

To this was soon added another collection, consisting of 75 crania, chiefly of ancient Peruvians, with a Peruvian mummy, donated by E. George Squire; and thenceforth, as seen from the reports of the Curators, no year elapses without important additions being made to the Museum collections in Physical Anthropology.

As to Jeffries Wyman, his services to American anthropology deserve more than a brief notice.

Wyman was born at Chelmsford, Massachusetts, August 11, 1814. He studied at Harvard, and in 1837 graduated in medicine. Finding difficulty in securing a favorable opportunity for practice, he became Demonstrator of Anatomy at Harvard College; but his earnings were so small that to eke out his subsistence he was obliged at the same time to become a member of the Boston fire department.[33] In 1840, however, he was appointed Curator of the Lowell Institute. In 1840–1841 he delivered at the Institute his well-known course of twelve lectures on comparative anatomy and physiology, and with the money thus earned went to Europe for further studies. At Paris, he devoted himself to comparative anatomy and physiology, and here in all probability he also became acquainted more directly with the beginnings of physical

of the trust; only suggesting, that, in view of the gradual obliteration or destruction of the works and remains of the ancient races of this continent, the labor of exploration and collection be commenced at as early a day as practicable; and also, that, in the event of the discovery in America of human remains or implements of an earlier geological period than the present, especial attention be given to their study, and their comparison with those found in other countries." (Signed) George Peabody. See *First Ann. Report Peabody Museum*, Boston, 1868, 25–26.

[32] *First Ann. Report Peabody Museum*, Boston, 1868, 5.

[33] Asa Gray: *Jeffries Wyman. Memorial Meeting of the Boston Society of Nat. History*, 8°, 1874, I, 1–37. Also Memoir of Jeffries Wyman by A. S. Packard, *Nat. Acad. Sci.*, pub. 1878, 75–126.

JEFFRIES WYMAN

anthropology. In 1843 he accepted the chair of anatomy and physiology at Hampden-Sidney College, Virginia; and in 1847 he was appointed to succeed Doctor Warren as Hersey Professor of Anatomy at Harvard College.

In 1852 Jeffries Wyman began, on the occasion of a necessary trip to the South for his health, an exploration of the shell-mounds in Florida. In 1856 he penetrated deep into Surinam, and two years later traveled extensively with George A. Peabody,[34] through Argentina, across the Andes to Chile, and back by way of Peru and Panama. In 1866, when "failing strength demanded a respite from oral teaching," he was named by George Peabody one of the seven trustees of the newly founded Peabody Museum, at the same time becoming the first Professor of American Archeology and Ethnology at Harvard University and a curator of the museum.

Long before his connection with the Peabody Museum, Wyman began to assemble collections in comparative anatomy, including some human material; and while a curator of the museum he brought together an important collection of human crania, the foundation of the present large somatological collections of that institution.

Wyman died of pulmonary hemorrhage September 4, 1874. He left no great published works, but a large number of valuable smaller contributions, many of which relate to or deal directly with physical anthropology. He gave us our first more precise osteological knowledge of the gorilla; he investigated conscientiously the human crania at the Peabody Museum, and extended his studies to the bones of the limbs, pointing out for the first time the prevalence of platycnemy in the Indian; he gave an excellent description of the shell-heaps of Florida and their human skeletal remains; and he was at the time of his death "undisputably the leading anthropologist of America" (Packard).

That the premature demise of Jeffries Wyman was a great loss to our branch of science will be seen from the following list of publications showing his anthropological and related activities:

Observations on the external characters, habits, and organization or the *Troglodytes niger*, Geof. Boston Jour. Nat. Hist., 1843–1844, IV, 362–376, 377–386.

Notice of the external characters, habits, and osteology of *Troglodytes gorilla*, a new species of ourang from the Gaboon river. Boston Jour. Nat. Hist., 1845–1847, V, 417–422; Ann. Sci. Nat., 1851, XVI, (Zool.) 176–182; Proc. Boston Nat. Hist. Soc., 1845–1848, II, 245–248; Amer. Jour. Sci., 1849, VIII, 141–142.

[34] Geo. A. Peabody, of Salem, should not be confused with George Peabody, the founder of the Museum.

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A new species of Troglodytes. Silliman's Jour., 1848, v, 106–107.
Twelve lectures on comparative physiology, 8°, Boston, 1849, 72 pp.
A description of two additional crania of the *engé-ena* (*Troglodytes gorilla*, Savage and Wyman) from Gaboon, Africa (1849). Proc. Boston. Soc. Nat. Hist., III, 1848–51, 179; Amer. Jour. Sci., 1850, ix, 34–45; New Phil. Journ. Edinb., 1850, xlviii, 273–286.
On the crania of Indians. Proc. Boston Soc. Nat. Hist., 1851–1854, IV, 83–84.
Description of the post-mortem appearances in the case of Daniel Webster. American Jour. Med. Sci., Jan., 1853.
Dissection of a black Chimpanzee (*Troglodytes niger*). Proc. Boston Soc. Nat. Hist., 1854–56, v, 274–275.
On the cancellated structure of some of the bones of the human body (1849). Jour. Boston Soc. Nat. Hist., 1857, VI, 125–140.
Account of the dissection of a human foetus. Proc. Bost. Soc. Nat. Hist., Feb. 3, 1858.
Account of the collection of gorillas made by Mr. Du Chaillu. Proc. Bost. Soc. Nat. Hist., Jan. 4, 1860.
On bones of a gorilla recently obtained in western equatorial Africa. Proc. Bost. Soc. Nat. Hist., Oct. 2, 1861.
Dissection of a Hottentot. Proc. Bost. Soc. Nat. Hist., April 2, 1862.
On the development of the human embryo. Proc. Bost. Soc. Nat. Hist., Dec. 3, 1862.
Observations on the cranium of a young gorilla. Proc. Boston Soc. Nat. Hist., 1863, IV, 203–206.
On the skeleton of a Hottentot (1863). Proc. Bost. Soc. Nat. Hist., 1865, IX, 352–357; Anthropol. Review, III, 1865, 330–335.
On malformations. Proc. Bost. Soc. Nat. Hist., Oct. 19, 1864.
On Indian mounds of the Atlantic coast. Proc. Bost. Soc. Nat. Hist., Nov. 2, 1864.
On the distorted skull of a child from the Hawaiian islands. Proc. Bost. Soc. Nat. Hist., Oct. 17, 1866.
Measurements of some human crania. Proc. Bost. Soc. Nat. Hist., Nov. 20, 1867.
On symmetry and homology in limbs (1867). Proc. Bost. Soc. Nat. Hist., 1868, XI, 246–278.
Observations on crania. Proc. Bost. Soc. Nat. Hist., 1868, IX, 440–462. Also Observations on crania and other parts of the skeleton. Fourth Annual Report of the Peabody Museum, 1871, 10–24.
On the fresh-water shell heaps of the St. John's river, East Florida. American Naturalist, 1869, II, 393–403, 449–463.
Human remains in the shell heaps of the St. John's river, East Florida. Cannibalism. American Naturalist, 1874, VIII, 403–414, also 7th Ann. Report of Peabody Museum, 1874, I, 26–37.
Remarks on cannibalism among the American aborigines. Proc. Bost. Soc. Nat. Hist., May 20, 1874.
Fresh-water shell mounds of the St. John's river, Florida; Fourth memoir. Peabody Academy of Science, Salem, Mass., 1875, 94, pl. I–IX.

LATER HISTORY OF ANTHROPOLOGY IN CONNECTION WITH THE HARVARD UNIVERSITY

After Wyman, the history of physical anthropology in Boston, and later also in Worcester, Mass., is one that belongs, with two notable exceptions, to the realm of the living. The two exceptions apply to Frederick Ward Putnam and Henry P. Bowditch. Besides these there are to be mentioned Miss Studley, Lucien Carr and Frank Russell.

Prof. F. W. Putnam, recently deceased,[35] was one of the best friends and promoters physical anthropology has had in this country. Born at Salem, Mass., in 1839, and with only the "education imparted by the old style of private schools," he soon showed such an interest in natural history and such ability, that when barely 17 he was made Curator of Ornithology at the Essex Institute of Salem. In 1857 he came under the direct influence of Agassiz, whose assistant he remained until 1864. During this time he also completed his general education at Harvard and in 1864 returned to the Essex Institute as Curator of Vertebrates, to soon after become Director of the Institute, a position which he held until 1873. During this time he became one of the founders and collaborators of the *American Naturalist*, a journal which still exists and which in the course of its existence has rendered valuable service to Anthropology. In 1873 he was elected Permanent Secretary of the American Association for the Advancement of Science, a position which he held for twenty-five years, or until 1898, when he became President of the Association. In 1885 he became a member of the National Academy.

His interest in Anthropology became manifest soon after his coming to Harvard, his first publication in the line, "On Indian Graves on Winter Island, Salem," dating from 1865. He was especially attracted by archeology and his interest in the subject showed a steady increase until 1875, when following the death of Jeffries Wyman he was appointed Curator of the Peabody Museum of Archeology and Ethnology, Harvard University. It was with this Institution that he was most closely associated until his death, as Curator or Director, which he built up, and which, including its valuable collections in Physical Anthropology, will remain his chief monument.

[35] August 14, 1915. Biographic sketches by Edward S. Morse, *Hist. Coll's. Essex Institute*, 1915, LII, (repr. pp. 1–8); by A. L. Kroeber, *Amer. Anthropologist*, 1915, 712–718; by Charles Peabody, *L'Anthropologie*, 1916, 169–171; by F. Boas, in *Science*, Sept. 10, 1915, 330–332; and ibid., Nov. 5, 1915, 638–639; detailed bibliography, by Frances H. Mead, in Putnam Anniversary Volume, 1909, 601–627.

In addition to his Museum work he was made in 1886 the Peabody Professor of Archeology at Harvard, a position which he held until 1909, when upon his retirement he became Professor Emeritus. In 1891 he was appointed Chief of the Department of Ethnology of the World's Columbian Exposition at Chicago and used this opportunity on the one hand for the assembling of important collections which became the foundation of the Field Columbian Museum (now Field Museum of Natural History), while on the other hand he initiated, assisted by Doctor Boas, extensive anthropometric observations on the North American tribes.

Between 1894 and 1903, in addition to his duties at Harvard he served also as Head Curator of the Department of Anthropology at the American Museum of Natural History, New York, built up great collections, including those in Physical Anthropology, and was instrumental in the organization of the Jesup and Hyde Expeditions, both of which included important researches in Physical Anthropology.

In 1903 he left his position in New York to accept that of Professor of Anthropology and Director of the Anthropological Museum at the University of California, carrying on these functions until 1909, the year of his retirement, conjointly with those at the Peabody Museum. In the latter he remained active until practically the end of his life.

The influence of Professor Putnam on the development of Physical Anthropology in the United States is only inadequately expressed by his publications. He was and remained essentially an archeologist, but he saw clearly the necessity of associating somatological with archeological and ethnological researches, and favored the development of both collections and investigations in the new line, in all the institutions with which he had connection. It was mainly through his kind offices that the writer was enabled to initiate his anthropological research among the American aborigines; he became one of his "boys" in 1898, and received valued encouragement from him until near his end.

In conclusion a few words seem due concerning Professor Putnam's position relating to the problem of early man on this continent. There is no question but that he was inclined to accept man's presence in America at a relatively early date; but he kept his mind open on this point and never reached a definite conclusion. In assigning to the author the study of the Trenton crania and later on those of the Trenton femur and the Calaveras skull, he never uttered a word to influence the results of the studies, and accepted the conclusions, even though disappointing, as quite final.

Professor Putnam's publications which touch more or less closely on Physical Anthropology are the following:[36]

On the great antiquity of Man. Bulletin Essex Institute, Salem, 1872, IV, 168.
Note on ancient races of America, their crania, migrations, and greatest development in Mexico and Peru. Ibid., 1872, 228–229.
Notice of Indian skull from shellbed on Rock island, Illinois. Bulletin Essex Institute, Salem, 1874, VI, 70–72.
Account of the scientific work of Professor Jeffries Wyman. Resolutions on his death. 1874, Ibid., 152–153.
On Indian and Esquimaux skulls, Bulletin Essex Institute, Salem, 1876, VIII, 66–67.
Remarks on some bones of New England Indians and on archaeological explorations in Tennessee. Proc. Boston Society of Natural History, 1879, XX, 331–333.
The former Indians of Southern California, as bearing on the origin of the Red Man in America. Abstract, Bulletin Essex Institute, Salem, 1880, XII, 4–6.
An Indian burial mound, Science, Cambridge, 1883, I, 168.
Stone graves of the Cumberland valley. Ibid., 292.
Ancient cemetery at Madisonville, Ohio. Ibid., 373–374.
Abnormal human skull from stone graves in Tennessee. Abstract. Proc. American Association Advancement of Science, Salem, 1883, XXXII, 390–392.
A new stand for skulls. Abstract. Ibid., 392–393.
Human foot-prints found in tufa near the shore of Lake Managua, Nicaragua. Abstract. Proc. American Antiquarian Society, Worcester, 1884, n. s., III, 92–93.
Human under-jaw found in gravel at Trenton, New Jersey. Abstract. Ibid., 93.
Obituary of Miss Cordelia A. Studley. Proc. Boston Society of Natural History, 1887, XXIII, 419–420.
Palaeolithic man in eastern and central North America. A discussion before the Boston Society of Natural History. Ibid., 421–424, 447–449.
Palaeolithic man in eastern and central North America. A discussion before the Boston Society of Natural History. 1890, Ibid., XXIV, 157–165. 6 ill.
Remarks on early man in America. Ibid., 468.
Anthropology at Harvard University. (In Recent Progress in American Anthropology, edited by F. W. Hodge) American Anthropologist, 1906, N. S., VIII, 458–463.
Note on the "Calaveras Skull." University of California Publications in Archaeology and Ethnology, Berkeley, 1907, VII, 128–129.

Dr. Henry P. Bowditch (1840–1911), Professor of Physiology in the Harvard Medical School, has left us, besides his physiological writings, a number of direct contributions to physical anthropology, some of

[36] In this connection should be consulted also his numerous reports to the Peabody and American Museum, etc.

which are of great value. The most noteworthy ones were those reporting his investigations on the growth of children. These investigations, undertaken in the early seventies under the auspices of the Health Department of the Social Science Association of Boston, were stimulated by the results of researches on Belgian children published in Quetelet's *Anthropométrie* (Brussels, 1870). Their final object was "to determine the rate of growth of the human race under the conditions which Boston presented." The results contributed much to our knowledge of the laws controlling the growth of the child, and stimulated in turn all later investigations on the subject in this country.

The contributions of Professor Bowditch to anthropology are included in the following bibliography:

The growth of children. 8th Ann. Rep. State Bd. Health of Mass., Boston, 1877, 1–51.

The growth of children. (A supplementary investigation) with suggestions in regard to methods of research. 10th Ann. Rep. State Bd. Health of Mass., Boston, 1879, 35–62.

Relation between growth and disease. Trans. Am. Med. Asso., 1881, 9 pp.

The physique of women in Massachusetts. 21st Ann. Rep. State Board of Health of Mass., Boston, 1889–90; Also in Med. Pub. Harvard Med. Sch., 20 pp., 1 table.

The growth of children, studied by Galton's method of percentile grades. 22d Ann. Rep. State Bd. Health, Mass., Boston, 1891, 479–522.

Are composite photographs typical pictures? McClure's Mag., N. Y., 1894, 331–342.

Returning to the Peabody Museum, we find associated there with Professor Putnam, for five years (1882–1886), Miss C. A. Studley, to whom we owe the creditable "Notes upon human remains from the caves of Coahuila, Mexico." (16th Ann. Rep. Peabody Mus., 1882, 233–259). She left the Museum in 1886 due to the necessity of obtaining a more remunerative position, but died shortly after.

Another of the earlier associates of Professor Putnam was Mr. Lucien Carr.

Lucien Carr (1829–1915), Assistant Curator of the Peabody Museum 1877–1894, though not, strictly speaking, a somatologist, was nevertheless actively interested in craniology and made a number of contributions to that subject. Unfortunately these suffer from some serious defects and have little value at the present time They are as follows:

Observations on the crania from the stone graves of Tennessee. Peabody Mus. Reports, Cambridge, Mass., 1876–79, II, 361–384.

Measurements of crania from California. Ibid., 497–505.

Observations on the crania from the Santa Barbara Islands, California. Rep. U. S. Geog. Surveys West of 100th Meridian, Wash., 1879, VII, 277–292.
Notes on the crania of New England Indians. Mem. Boston Soc. Nat. Hist., 1880; repr. 10 pp.

Frank Russell, Ph.D. (1868–1903), was unfortunately taken away too soon to be able to accomplish much for our branch of science. He was for several years Instructor in Anthropology at Harvard University and in charge of the anthropological laboratory of the Peabody Museum. In 1901 he also became associated temporarily with the Bureau of American Ethnology. He carried on explorations, partly anthropological and partly ethnological, among the tribes in northern Canada and among the Pima of Arizona, and published several contributions on craniological work. He succumbed to tuberculosis before his work could leave a lasting impression on American anthropology. Following is a list of his writings which bear more or less on our subject:

Explorations in the Far North, 8°, 1898, 290 pp., (expeditions under the auspices of the University of Iowa, 1892–3–4).
Human remains from the Trenton gravels. Am. Naturalist, 1899, 33.
Studies in cranial variation. Am. Nat., 1900, 737–745.
New instrument for measuring torsion. Am. Nat., 1901, No. 412.
Laboratory outlines for use in somatology. Am. Anthropologist, 1901, v, 3.

CANADA

Before we turn again southward, a few words are due to Canada.

In 1862 Sir Daniel Wilson (1816–1892), Professor of History and English Literature in University College, Toronto, published two volumes on *Prehistoric Man*, the second of which is devoted largely to notes and measurements, many of them original with the author, on Mound, Peruvian, Mexican, and other American crania, including a nice series (39 male, 18 female) of those of the Hurons, besides a valuable series (39 skulls) of the Eskimo. To the description of the crania is added a chapter on "Racial Cranial Distortion," and other chapters on "The Indian of the West," "Intrusive Races," and "Migrations."

Besides his *Prehistoric Man*, which reached three editions, Sir Daniel Wilson published between 1853 and 1891 a series of articles dealing with various phases of anthropology and showing his strong and continued interest in the subject. These articles, a list of which follows, show that the subjects which mainly interested the author were craniology, early man, right and left handedness, and the Indians, together with one or two of the European races. There is much in these papers

that would deserve to be better known, though perhaps none of them reach the standard set at present for the professional anthropologist.

Remarks on the intrusion of the Germanic races on the area of the older Celtic races of Europe. Canadian Journal, 1853, II, 246.
Hints for the formation of a Canadian collection of crania. Ibid., 1854–'5, III, 345–347.
Displacement and extinction among the primeval races of man. Canad. J. Sci. Liter. & Hist., 1856–78, I, 4.
Discovery of Indian remains, County Norfolk, Can. West. Ibid., 1856, I, 511–519. Indian remains. Ibid., 554–556.
Supposed prevalence of one cranial type throughout the American aborigines. Ibid., 1857, ii, 406–435. Also Edinb. New Philos. J., 1858, VII, 1–32.
Notice of a skull brought from the Crimea. Ibid., V, 321–331.
Modifications affecting the ethnic significance of peculiar cranial forms. Ibid., 1861, VI, 414–425. Also Edinb. New Philos. J., 1861, XIV, 269–281.
Ethnical forms and undesigned artificial distortions of the human cranium. Ibid., 1862, VII, 399–446; also rep., 8°, Toronto, 48 pp., 3 pl.
Physical Ethnology. Smiths. Rep., Wash. 1863, 240–302.
Illustrations of the significance of certain ancient British skull forms. Ibid., VIII, 127–157.
Physical characteristics of the ancient and modern Celt. Ibid., IX, 369–405.
Race head forms and their expression by measurements. Ibid., XII, 269–303.
The Huron race and its head form. Ibid., 1871–73, XIII, 113–134; also J. Anthrop. Inst., 1872, I, 262–263; also Proc. & Trans. Roy. Soc. Can., II, 1884, 55–100.
Righthandedness. Ibid., XIII, 193–231.
Hybridity and absorption of the Red Indian race. Ibid., XIV, 432–466.
Brain weight and size in relation to relative capacity of races. Ibid., 1876, XV, 177–230; also rep., Toronto, 56 pp.
Interglacial American man. Ibid., XV, 557–573.
The Bohemian skull. Proc. Canad. Inst. (1879–1890), III, 43 (only a mention).
Primaeval dexterity. Ibid., III, 125–143.
Anthropology. 8°, N. Y., 1885, 55 pp.
The right hand: lefthandedness. 12mo., Lond. and N. Y., 1891, X, 215 pp.

Besides Daniel Wilson, Canada has produced two other men, now no more living, who deserve a special mention in this place. They were J. W. Dawson, the geologist and paleontologist, and David Boyle, the archeologist.

Professor Dawson (1820–1899), for many years principal of the McGill College and University, Montreal, became, in connection with his own work in paleontology and under the influence of Lyell's, Wilson's, and other publications on man's antiquity, seriously interested in this subject. He published several works relating more or less to anthropology, which were followed by his well-known *Fossil Men and their Modern Representatives* (London, 1880, i-viii, 1–348). It is interesting that in

this work, which naturally suffers from the imperfections of knowledge of its time, Sir Dawson shows himself quite skeptical as to any great antiquity of man in America: (p. 207) "The actual American race can make no monumental pretensions to a great antiquity, for its oldest remains, those of the ancient Alleghan nations, situated as they are on the modern alluvium of the western rivers, claim no greater antiquity than the similar mounds on the banks of the Tigris, and possibly are much less ancient. The only actual evidence of great age known in connection with them—that afforded by the growth of forest trees—would not carry them back farther than the earlier centuries of our era, and the decayed condition of the bones in the burial mounds is well known to be a criterion of very uncertain value . . . "Thus our primitive American men seem to fall short in interest of those pre-historic races in Europe with which we have been comparing them, and which are by many believed to reach backward to a time enormously exceeding that to which any history, sacred or secular, extends."

Additional publications of Professor Dawson[37] which related more or less directly to physical anthropology, were as follows:

Review of "Darwin on the Origin of Species by means of Natural Selection." Can. Nat. & Geol., Montreal, 1860, 5, no. I, art. III, 100–120.

On the antiquity of man. A review of "Lyell" and "Wilson." Ibid., Montreal, 1863, 8vo., VIII, 113–135. Also Edinburgh New Philos. J., 1864, N. S., XIX, 40–64.

On modern ideas of derivation. Can. Nat. & Quart. J. Sci., Montreal, July, 1869, N. S., IV, no. 2, 121–138.

The story of earth and man. London and Montreal, 1872, 12mo., 420 pp. (9 editions).

Primitive man, etc. Trans. Victoria Institute, London, 1875, VIII, 59–63.

The dawn of life. Montreal, 1875, 239 pp. Also London, 1875, under title "Life's dawn on earth, etc.," 239 pp.

Origin and history of life on our planet. Montreal, 1875, 26 pp. Also Amer. Nat., 1875, IX, 529–552. Also Amer. Assoc. Adv. Sci., Proc. 1875, XXIV, pt. 2, 3–26.

Haeckel on the evolution of man. Princeton Rev., N. Y., 1880, V, 444–464.

The chain of life in geological time. Lond., 1880, 8vo., I–XVI, 1–272. (Several subsequent editions.)

The antiquity of man and the origin of species. Kansas City Rev., K. C., 1881, 8vo., IV, 530–536; 595–600.

Notes on pre-historic man in Egypt and the Lebanon. Lond., 1884, 8vo., 1 pt., 15 pp., 3 pls. Also Edinburgh, Dublin, Paris, 1884, ditto. Discussion on same subject, Victoria Inst. Trans., 1885, XVIII, 9–12; 287–313.

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[37] For portrait, biography and detailed bibliography of Sir John William Dawson, see Henry M. Ami, *Am Geol.*, July, 1900, XXVI, 1–48.

Notes on aboriginal antiquities recently discovered in the island of Montreal. Canad. Nat. & Geol., Montreal, 1860, v, 430–449.
Additional notes on aboriginal antiquities found at Montreal. Ibid., 1861, vi, 362–373.

David Boyle (1824–1909) was essentially an archeologist. His personal collections in this line, donated about 1876 to the Canadian Institute, became the nucleus of the present Provincial Archaeological Museum, at Toronto, of which ten years later he became curator and eventually director. He was not a somatologist, but his friendly attitude towards this branch of science is well seen in his detailed and well-illustrated "archaeological reports," published at first in connection with the Canadian Institute and later as appendices to the report of the Minister of Education for Ontario, many of which contain valuable notes on Indian ossuaries, other burials, on the collected skeletal material, and on other subjects of direct interest to physical anthropology.

Under the influence of Daniel Wilson's and Professor Dawson's activities, there were published in Canada between 1854 and 1890 a series of contributions relating more or less directly to physical anthropology and containing valuable information. A list of the more important of these articles is given underneath. They cover a wide variety of subjects; and it will be noticed that no more than two in any case are by the same author.[38]

Bell (C. N.)—The mound builders in Canada. Proc. Canadian Institute, 1879–90, iv, 131–137.
Bleasdell (William)—The Indian tribes of Canada. Canadian Jour., 1852–55, iii, 209–210.
Boyle (Susanna P.)—Cranial measurements. Archeol. Rep. Can. Inst., in Appendix to Rep. Minist. of Education, Toronto, 1892, 57–101.
Bryce (Rev. George)—The mound-builders (a lost race described). Trans. Hist. Soc. Winnipeg, 1884–85, 1–20.
Cumming (W. H.)—On marriage and infanticide in China. Canad. J. Sci. Liter. & Hist., 1856–78, ix, 178–184.
Dade (Rev. C.)—Indian remains. Canad. J., 1852–53, i, 6.
Dartnell (G. H).—Duration and expectation of life in Canada. Canad. J. 1852–55, ii, 191.
Dawson (Geo. M.)—Sketch of the past and present condition of the Indians of Canada. Canad. Nat. & Geol., 1881, N. S., ix, 129–159.
——— Notes on the Indian tribes of the Yukon District and adjacent northern portion of British Columbia. Repr. Ann. Rep. Geol. Survey. Canad., 1887, 1–23.

[38] Some of these authors are doubtless still among the living.

DURAND (CHARLES)—Indian graves on the Humber. Note in "Toronto Globe," Jan. 15, 1887.

HARVEY (ARTHUR)—Celtic, Roman and Greek types in France. Trans Canad. Instit., 1890, II, 176–208.

HIRSCHFELDER (C. A.)—Anthropological discoveries in Canada. Proc. Canad. Inst., N. S., 1883, I, 354. Also "Toronto Mail," Dec. 2, 1882.

——— The practical and theoretical study of anthropology. Proc. Canad. Inst., N. S., 1883, I, 355. Also "Toronto Mail," Apr. 14, 1883.

HUNTER (A. F.)—Villages and ossuaries of the Huron country. Archaeol. Rep., Canad. Instit., Toronto, 1888, 57–58.

——— National characteristics and migrations of the Hurons as indicated by their remains in North Simcoe. Reports the cataloguing of 140 Huron-ossuaries. Trans. Canad. Instit., 1891–92, III, 225–228.

KANE (PAUL)—The Chinook Indians. Canad. J. Sci. Liter. & Hist., 1856–78, II, 11–30.

LANGTON (JOHN)—On the measurements of heads in ethnological investigation; Trans. Lit. & Hist. Soc., Quebec, 1866.

LEE (RICH.)—The native tribes of Polynesia. Canad. J. Sci. Liter. & Hist., XII, 443–459.

MATHEWS (PERCY W.)—Notes on diseases among the Indians frequenting York factory, Hudson Bay. Montreal, 1885.

MCLEAN, (REV. JOHN)—Mortuary customs of the Blackfeet Indians. Proc. Canad. Instit., 1879–90, V, 20–24.

MATTHEWS (DR. PERCY W. P.)—Early development of aboriginal women. Ibid., IV, 181–186.

PAYNE (F. F.)—The Eskimo of Hudson's Strait. Ibid., VI, 26; 213–230.

PREST (W. H.)—Measurements of Beothuk skulls. Trans. Nova Scot. Inst. Nat. Sci., 1894–95, IX, p. LXXXVIII et seq.

SCHULTZ (DR. M. P.)—The mound builders of the West. Canad. Nat. & Geol., etc.. 1881, IX, 60–62.

STUPART, (R. F.)—Eskimo of Stupart Bay. Proc. Canad. Instit., 1879–90, V, 20–24.

TUCKER (DAVID)—On secluded tribes of uncivilized men. Canad. J. Sci. Liter. & Hist., 1856–78, IX, 326–343.

VAN COURTLAND (EDWARD)—Notice of an Indian burying ground. Canad. J., 1852–53, I, 160–161.

WILSON (CAPTAIN)—Report on the Indian tribes inhabiting the country in the vicinity of the 49th parallel of M. Latitude. J. Ethnol. Soc. London, 1865, IV, 275–332.

A very important organized step in the line of anthropological research in Canada was initiated in the early eighties by the appointment, under the auspices of the British Association for Advancement of Science, of a Committee, consisting of Dr. E. B. Tylor, Dr. G. M. Dawson, General Sir J. H. Lefroy, Dr. Daniel Wilson, Mr. R. G. Haliburton, and Mr. George W. Bloxam (Secretary), for the purpose of investigating and publishing reports on the physical characters, languages,

and industrial and social condition of the Northwestern tribes of the Dominion of Canada. As, however, the somatological work accomplished under this Committee belongs in the main to authors who are still among the living, the subject will be dealt with most appropriately in the final section of the memoir.

MIDDLE ATLANTIC STATES

Proceeding again southward from Boston and Toronto we find that, in New York, the old Ethnological Society had gone out of existence. A number of medical collections, including anthropological specimens, were being formed in connection with several of the hospitals and colleges, but resulted in nothing of importance to our science. The American Museum of Natural History was not established until 1869, and had not seriously begun its valuable collections or research in physical anthropology until after the advent of Putnam, well toward the end of the century.

West of New York, several collections of Indian crania were begun in the earlier part of the second half of the nineteenth century, particularly in Chicago, where also appeared, between 1867 and 1873, a number of publications touching on the physical anthropology of the American race by J. W. Foster, the geologist (1815–1873).[39] Unfortunately none of these publications, so far as they dealt with somatology, were of much value.

In coming back to Philadelphia, we see that the old Wistar and Horner Museum (founded 1808) has been enriched by anthropological material;[40] and there are rising from the medical ranks which have already given us Morton, Meigs, and Leidy in that city, two new men who, particularly in one case, were to become of considerable importance to physical anthropology. They are Dr. Harrison Allen (1841–'97), and Dr. Daniel G. Brinton (1847–'99).

Dr. Harrison Allen was born in Philadelphia in 1841. Like Morton he was deprived, by untoward circumstances, of preliminary higher education. In a large measure self-taught, he matriculated in 1859 in the

[39] On the Antiquity of Man in North America, *Trans, Acad. Sci.*, I, Chicago, 1867–69, 227–257. On Certain Peeculiarities in the Crania of the Mound-Builders, *Proc. Am. Asso. Adv. Sci.*, 1872, XXI, 227–255; *American Naturalist*, 1872, VI, 738–747. *Prehistoric Races of the United States of America*, 8°, Chicago, 1873, XV, 415.

[40] Destined eventually to become a part of the collections of the Wistar Institute of Anatomy and Biology, incorporated in 1892.

medical department of the University of Pennsylvania and was graduated in 1861. From the latter date to 1865 he served as physician or surgeon in various city and army hospitals at Philadelphia and about Washington. At the close of 1865, resigning from the army service, he returned to Philadelphia to attend on the one hand to practice, and on the other to engage in anatomical, anthropological, and biological investigation. Soon after he was offered the position of Professor of Zoölogy and Comparative Anatomy in the auxiliary Faculty of Medicine at the University of Pennsylvania,[41] which he held for many years. Later he was also for a time Professor of Institutes (mainly physiology) at the University; the chair of anatomy was occupied by Leidy. In 1892 he was elected President of the Association of American Anatomists, and shortly after became the first Director of the Wistar Institute.

Judging from his anthropological writings, Harrison Allen became interested in this branch of science primarily through the works of Morton and J. Aitken Meigs, the latter of whom he knew personally; in large measure, however, he also followed the more modern English craniologists.

The number of his anthropological contributions is large, as will be seen from the appended list; but in many instances, it is to be regretted, the title covers merely a note on a more or less extended oral communication, the publication of which in full was not accomplished.

Allen's three most important contributions to physical anthropology are *The Clinical Study of the Skull* (1890); *The Crania from the Mounds of the St. John's River, Florida* (1896); and *The Study of Hawaiian Skulls* (1898, finished just before his death). These works are accompanied by excellent illustrations; the measurements and special observations are much more detailed than in any previous American work; the whole treatment of the subjects shows much eruditon; and the works compare favorably with any anthropological memoirs published to that date abroad.

The *Clinical Study of the Skull* was the tenth of the Toner Lectures of the Smithsonian Institution—lectures "instituted to encourage the discovery of new truths for the advancement of medicine." It was delivered May 29th, 1889, and printed a year later. Notwithstanding its medical title, it is strictly an anthropological publication, which deals

[41] *Memoir of Harrison Allen, M.D.*, by Horatio C. Wood., M.D.; read April 6, 1898; 8°, Phila. 1898, 1–15. This memoir, as well as the bibliography it contains, are, however, defective.

with many features and anomalies of racial skulls that had scarcely been noticed up to that time, as will be apparent from the following subdivisions of the essay: 1, The malar bone; 2, the lower jaw; 3, the norma basilaris; 4, the basi-cranial angle; 5, the posterula; 6, the nasal chambers; 7, the vertex—its sutures, eminences, depressions, general shape, etc.; 8, sutures other than those of the vertex; 9, the foramina; 10, the grooves caused by blood-vessels; and 11, the cranial ridges, processes, etc.

The memoir on *Crania from the Mounds of the St. John's River*, calls attention for the first time to the highly deserving series of archeological explorations, and their accompanying anthropological collections, carried on to this day by Mr. Clarence B. Moore. Comparative measurements and observations are given on a considerable number of other American skulls from Alaska to California. The results of several interesting new measurements are shown; and included are reports on complete and incomplete divisions of the malar bone, on various features of the condyloid process of the lower jaw, on senile absorption, and on numerous interesting morphological characteristics of the teeth.

The final larger anthropological contribution of Harrison Allen, that on Hawaiian skulls, is really a modern production, which gives valuable detailed measurements; shows a novel method of graphic representation of the numerical data and of contrast of series; and, like the works previously mentioned, includes many interesting collateral observations, such as those on prenasal fossæ, the lower jaw, the infra-orbital suture, the hard palate, the teeth and their effect on skull form, the premature closure of sutures, and various pathological conditions.

Besides the above, there are a number of articles by Harrison Allen the true contents of which are more or less obscured, or imperfectly expressed by their titles, and which are of considerable interest to the anthropologist. They are "The Jaw of Moulin Quignon" (1867); "Localization of Diseased Action in the Osseous System" (1870); "On Certain Peculiarities in the Construction of the Orbit" (1870); "On the Methods of Study of the Crowns of the Human Teeth" (1888); and "On the Effects of Disease and Senility in the Bones and Teeth of Mammals."

Considering the excellence of Harrison Allen's contributions to anthropology and the plain fact that he, after Morton and Wyman, stands as the foremost American representative of our branch of science before the end of the nineteenth century, it might seem strange that his influence on the development of the science remained only moderate.

HARRISON ALLEN

The explanation of this lies doubtless in the fact that he did not devote himself exclusively to physical anthropology, but by many was regarded essentially as a biologist or anatomist; and that except for the few years before his death, when he held the directorship of the Wistar Institute, he was not connected in a higher capacity with any museum or institution, and made no noteworthy collections. Also he never engaged in the teaching of anthropology; and his publications in this line, while altogether of a respectable number and volume, were nevertheless, when taken individually, often far apart, disconnected, and mostly quite brief. A list of his writings follows:

[The Third Condyle in Man.] Proc. Acad. Nat. Sci. Phila., 1867, 137.

The Jaw of Moulin Quignon. Dental Cosmos, Phila., 1867, IX, 169–180.

On the inter-orbital space in the human skull. Proc. Acad. Nat. Sci. Phila., 1869, Biol. 13.

Localization of diseased action in the osseous system. Am. Jour. Med. Sci., 1870, 401–409.

On certain peculiarities in the construction of the orbit. Am. Jour. Med., Sci., Phila., 1870, N. S., LXIX, 116–119.

Life-form in art. 4°, Phila., 1875, 70 pp.

On the effect of the bipedal position in man. Proc. Acad. Nat. Sci. Phila., 1875, 468–469.

Autopsy of the Siamese Twins. Trans. Coll. Physicians Phila., Phila., 1875, VIII, 21–42.

A human skull exhibiting unusual features. Proc. Acad. Nat. Sci. Phila., 1876, 17–18 (Pterygo-sphenoid process).

Distinctive characters of teeth. Proc. Acad. Nat. Sci. Phila., 1878, 39; note.

Asymmetry of the turbinated bones in man. Proc. Acad. Nat. Sci. Phila., 1882, 239–240.

Irregularities of the dental arch. Proc. Acad. Nat. Sci. Phila., 1882, 310.

Asymmetry of the nasal chambers without septal deviation. Arch. of Laryngol., 1883, IV, 256–257.

On the methods of study of the crowns of the human teeth, including their variations. Dental Cosmos, Phila., XXX, 1888, 376–379.

On hyperostosis of the premaxillary portion of the nasal septum, etc. Medical News, Phila., 1890, LVII, 183–186.

The influence exerted by the tongue on the positions of the teeth. Proc. Acad. Nat. Sci. Phila., 1891, 451.

On the bipartite malar in the American Indian. Proc. Asso. Am. Anatomists for 1888–1890, Wash., 1891, 16.

The forms of edentulous jaws in the human subject. Proc. Acad. Nat. Sci. Phila., 1893, 11–13.

Congenital defects of the face. N Y. Med. Jour., 1893, LVIII, 759–760.

Hyperostosis on the inner side of the human lower jaw. Proc. Acad. Nat. Sci. Phila., 1894, 182–183.

The changes which take place in the skull coincident with shortening of the face-axis. Proc. Acad. Nat. Sci. Phila., 1894, 181–182.

Pithecanthropus erectus. Science, 1895, N. S., I, 239–240, 299.
The classification of skulls. Science, 1895, N. S., I, 381.
Demonstration of skulls showing the effects of cretinism on the shape of the nasal chambers. N. Y. Med. Jour. 1895, LXI, 139–140.
Note on a uniform plan of describing the human skull. Proc. Asso. Am. Anat., 8th session, 1895, 65–68; also in Proc. Acad. Nat. Sci. Phila., 1896, 170–174.
On the effects of disease and senility as illustrated in the bones and teeth of mammals. Science, 1897, N. S., V, 289–294. German translation in *Rundschau*.
Study of skulls from the Hawaiian islands. With an introduction by D. G. Brinton. Wagner Institute. Proc. Acad. Nat. Sci. Phila., 1898, V, 1–55, 12 plates.

The second student mentioned at the beginning of this section was Daniel G. Brinton. Of widely different personality from that of Harrison Allen, his services to physical anthropology were also of quite a different character.

Doctor Brinton was graduated from Yale, received his medical degree in 1860 at the Jefferson Medical College in Philadelphia, and traveled in Europe. He served through the Civil War in his medical capacity, but toward the end of 1865 returned to West Chester and thence to Philadelphia, where he practiced medicine and became editor of *The Medical and Surgical Reporter*, position he held until 1887.[42] Eventually he became Professor of Ethnology and Archeology in the Academy of Natural Sciences of Philadelphia, Professor of American Linguistics and Archeology in the University of Pennsylvania, and Curator of the American Philosophical Society collections.

Brinton's interest in anthropology dated probably from his boyhood, and extended to all branches of the science, including somatology. Like Harrison Allen, he came but little in direct contact with the American tribes, in whom nevertheless all his interests centered; but unlike Allen he was much more a student than a laboratory man or a practical anatomist. Allen and Brinton associated, however, as friends, and each doubtless exercised an influence on the other's thought and scientific production.

Among the numerous publications of Brinton relating to anthropological subjects, more than thirty are of more or less direct interest to physical anthropology (see appended bibliography). Of these the large majority are of a documentary or general nature, the more noteworthy being *The Floridian Peninsula* (1859); *The Mound-builders* (1881);

[42] For further details see *Report of the Brinton Memorial meeting*, 8°, Phila., 1900, 67 pp.

Races and Peoples (1890); and *The American Race* (1891). Among his special articles, those deserving more particular notice here are that on "Anthropology, as a Science and as a Branch of University Education in the United States" (1892); "On Certain Indian Skulls from Burial Mounds in Missouri" (1892); "On the Variations of the Human Skeleton and their Causes" (1894); "On the Aims of Anthropology" (1895); and "On the Factors of Heredity and Environment" (1898).

In glancing over these publications the student of physical anthropology will find many useful data and much that is helpful; but here and there he will also come across a bowlder in the path which it will be necessary to remove and the traces of which in some cases will long yet be perceptible. Among the most helpful were Brinton's articles on the mound-builders, counteracting the old prevalent opinion that there had existed a separate mound-builder race distinct from the rest of the Indians. Among his opinions which it would be hard to accept today were that the Eskimo extended far to the south of their present eastern abode; the probability of the derivation of the American race at the close of the last glacial epoch from Europe; and his correspondingly antagonistic attitude toward the theory of Asiatic derivation of the Indians.

Doctor Brinton excelled as a critic and in discussion; and notwithstanding a lack of sufficient specialization in physical anthropology, his activities exercised a favorable influence on the progress of the science in common with other branches of anthropology. Dr. Brinton's bibliography relating more or less to somatology follows:

The Floridian peninsula, its literary history, Indian tribes and antiquities. 8°, Philadelphia, 1859.

The Shawnees and their migrations. Historical Magazine, Jan. 1866 (Morrisania, New York), x, 1–4.

The Mound-builders of the Mississippi valley. Historical Magazine, Feb., 1866, xi, 33–37.

The probable nationality of the mound-builders. American Antiquarian, Oct., 1881, iv, 9–18.

Anthropology and ethnology. Iconographic Encyclopedia, Phila., 1886, i, 1–184.

A review of the data for the study of the prehistoric chronology of America. Proc. Amer. Assoc. for the Advancement of Science, 1887, Sep. 26 pp.

On an ancient human footprint from Nicaragua. Proc. Amer. Philos. Soc., Nov. 1887, xxiv, 437–444.

On a limonite human vertebra from Florida. Proc. Amer. Assoc. Adv. Sci., 1888, xxvii.

On the alleged Mongoloid affinities of the American race. Proc. Amer. Asso. Adv. Sci., 1888, xxvii, 325.

The cradle of the Semites. A paper read before the Philadelphia Oriental Club. Phila., 1890, 26 pp.

Races and peoples; Lectures on the science of ethnography. 12°, N. Y., 1890, 313 pp., 5 maps.

Essays of an Americanist. I, Ethnologic and Archaeologic. Illus., 8°, Phila., 1890.

Folk-lore of the bones. Jour. Amer. Folk-lore, Jan. 1890, III, 17–22.

The American race: A linguistic classification and the ethnographic description of the native tribes of North and South America. New York, 1891, 392 pp.

Current notes on anthropology. Science, New York, 1892.

Anthropology as a science and as a branch of university education in the United States. Phila., 1892, 15 pp.

The nomenclature and teaching of anthropology. American Anthropologist, July, 1892, V, 263–271.

Remarks on certain Indian skulls from burial mounds in Missouri, Illinois and Wisconsin. Trans. Coll. Physicians, Phila., Nov., 1892, third series, XIV, 217–219.

European origin of the white race. Science, June, 1892, XIX, 360.

Proposed classification and international nomenclature of the anthropologic sciences. Proc. Amer. Assoc. Adv. Sci., 1892, XLI, 257–258.

The African race in America. Chambers' Cyclopedia, new edition, London and Phila., 1893, VII, 428–430. Article "Negroes."

The beginnings of man and the age of the race. The Forum, December, 1893, XVI, 452–458.

Variations of the human skeleton and their causes. Amer. Anthropologist, Oct., 1894, VII, 377–386.

On various supposed relations between the American and Asian races. Mem. Internat. Congr. Anthrop., Chicago, 1894, 145–151.

The "nation" as an element in anthropology. Mem. Internat. Congr. Anthrop., Chicago, 1894, 19–34.

The aims of anthropology. Proc. Amer. Assoc. Adv. Sci., 1895, XLIV, 1–17.

Left-handedness in North American aboriginal art. Amer. Anthropologist, May, 1896, IX, 175–181.

The relations of race and culture to degenerations of the reproductive organs and functions in women. Medical News, N. Y., Jan. 18, 1896, 68–69.

On the remains of foreigners discovered in Egypt by Mr. Flinders Petrie, 1895. Proc. Amer. Philosophical Soc., Jan., 1896, XXXV, 63–64.

Dr. Allen's contributions to anthropology. Proc. Acad. Nat. Sci. Phila., December, 1897, 522–529.

The factors of heredity and environment in man. Amer. Anthropologist, Sept., 1898, XI, 271–277.

The dwarf tribe of the upper Amazon. Amer. Anthropologist, Sept., 1898, XI, 277–279.

The Peoples of the Philippines. Amer. Anthropologist, Oct., 1898, 293–307.

HISTORY OF ANTHROPOLOGY IN WASHINGTON

Again leaving Philadelphia, further tracing of the earlier history of physical anthropology in the English speaking countries of this continent leads us to Washington, to the various Government exploring expeditions, to certain corporate bodies associated with the United States Government, and finally to Government institutions proper.

The earliest event of importance to physical anthropology in Washington of which any records exist, was the gathering of Indian and other crania made by the United States Exploring Expedition of 1838–1842. No concrete record seems to exist showing exactly what this collection comprised. It was deposited with the National Institute (1840–1862), a society with a strong Government affiliation. In 1841 this society was granted the use of quarters in the Patent Office building for its collections, and collections belonging to the Government were confined to its care. In the latter, we are told, natural history and ethnology predominated.[43] According to a catalogue of the collections of the National Institute, by Alfred Hunter (second edition, 1855), the anthropological material in the Institute at that time comprised an "Ancient skull;" "a very superior collection of human crania, many of them collected by the United States Exploring Expedition from the Pacific Islands;" "a skull from the Columbia river;" "skull of a Chenook Chief;" four skulls "from an ancient cemetery;" a "mummy from Oregon;" "two tattooed heads from Fiji;" "Peruvian mummies;" "two Egyptian mummies;" "the skull and paws of a chimpanzee;" and numerous busts in plaster of distinguished persons. These collections remained in the Patent Office in part until 1858 and in part until 1862, when they were transferred to the Smithsonian Institution.

The Smithsonian Institution was established in 1846, under the terms of the will of James Smithson, who in 1826 bequeathed his fortune to the United States for the "increase and diffusion of knowledge among men."[44] From the income of the fund the present Smithsonian building was erected on land given by the United States, and on its completion in 1858 a large part of the collections assembled under the auspices of the Government up to that time were assigned to the custody of

[43] See Richard Rathbun: The National Gallery of Art, *Bull. 70, U. S. National Museum*, Wash., 1909, p. 25 et seq.

[44] *The Smithsonian Institute, at Washington*, etc., Washington, 1907, also, *The Smithsonian Institution; documents relative to its origin and history*, by Wm. J. Rhees, Washington, 1879, 1027 pp.

the Institution. The National Institute passed out of existence in 1862.

In 1863 the Smithsonian Institution collections were partly destroyed by fire,[45] but the anthropological part fortunately escaped.

In 1862 another establishment was founded in Washington which was destined to render a great service to physical anthropology. This was the Army Medical Museum. Almost from the first cooperative relations were established with the Smithsonian Institution, involving in the course of time extensive exchange of specimens; and on January 16, 1869, a formal arrangement was entered into between Secretary Henry, for the Smithsonian Institution, and Dr. George A. Otis, curator of the Army Medical Museum, for the transfer thenceforth from that Museum to the Smithsonian Institution of all ethnological and archeological articles that were then in the Medical Museum or might be received in the future, in return for which the Museum received and was to receive thenceforth all human skeletal material. The actual number of crania then transferred does not appear in the records, but the collection must already have been of some importance; and in the following years hundreds of specimens of similar nature were received by the Museum from the Smithsonian. In addition, letters and circulars were sent out by Doctor Otis to Army and Navy surgeons as well as to other persons, and through this medium the Army Medical Museum anthropological collections grew until, in 1873, they included approximately sixteen hundred crania of American aborigines and other races.[46]

About 1870, or shortly after, a series of measurements were undertaken on the crania in the Army Medical Museum collection under Doctor Otis's direction; and in 1876 and again in 1880 a "Check-List" was published by Doctor Otis, the later edition including records on more than two thousand human crania and skeletons from many parts of the world. Unfortunately the majority of the measurements were made by an unscientific employee and with instruments less perfect than those now in anthropometric use, with the consequence that many of the determinations have since been found by remeasurement of the specimens to be more or less inaccurate, and the catalogue on that account can not be used with any degree of confidence.

After Doctor Otis's death in 1881 the anthropological studies suffered a temporary set-back, but were stimulated again in 1884 when Dr. J.

[45] See *Annual Report of the Smithsonian Institution*, 1864, p. 117, et seq.

[46] For an account of the services of the Army Medical Museum to American anthropology, see Dr. D. S. Lamb, Trans. XIX Intern. Congr. Americanists, Wash., 1917, 625–632.

S. Billings, U. S. Army, became Curator of the Museum. As a result of Doctor Billings' interest in anthropological work it was taken up by another United States Army surgeon, namely Dr. Washington Matthews.

Before this, however, two important publications of direct interest to physical anthropology were made possible by investigations conducted in connection with the United States Army. The first was Dr. B. A. Gould's, *The Military and Anthropological Statistics of the War of the Rebellion*, 8°, New York, 1865; the second being the *Statistics, Medical and Anthropological, of the Provost-marshal-general's Bureau*, two volumes, 4°, 1875, by J. H. Baxter.

Both of these works deal with statistical data and observations obtained on Northern recruits during the Civil War, and represent the first efforts of note on this continent in anthropology of the living, the records extending to many thousands of subjects. The data were secured by medical examiners and other physicians. Unfortunately the work was carried out under unfavorable circumstances and by men many of whom had no previous knowledge of these matters, and who received no instruction except by circulars. The records in consequence, while interesting, can not be regarded as sufficiently reliable for the present demands of anthropology. In a number of instances, as in the reports on certain physiological observations on the "Indians" enlisted in the army, the results, in view of our subsequent information on these subjects, are so inaccurate as to be quite useless.

Dr. Washington Matthews (1843–1905), to whom we may now return, while becoming known to science mainly for his contributions to the Hidatsa and Navaho ethnology, was nevertheless interested considerably and effectively in physical anthropology. In the Army Medical Museum, with which he became connected about 1884, and in part with Doctor Billings, he carried on and published the results of investigations on the measurement of the cranial capacity, on composite photography and appliances for the same, on several modifications of anthropometric instruments, and on anatomical and anthropological characteristics of Indian crania, particularly those of the ancient Pueblos collected by the Hemenway Expedition.

The Hemenway Expedition was fitted out in 1886 under the direction of Frank Hamilton Cushing, with funds supplied by Mrs. Mary Hemenway of Boston, for exploring certain ruins of the Gila drainage in Arizona. While the work was fairly under way, Dr. J. L. Wortman, at that time anatomist of the Army Medical Museum, visited the excavations in the Salt River valley at the instance of Mr. Cushing and Dr.

Matthews, and obtained a large collection of the fragile skeletal remains of the ancient Pueblos, which was forwarded to the Museum. Here they were eventually studied by Matthews and Wortman and the results were published in a quarto memoir,[47] which forms a contribution of lasting value to physical anthropology and a worthy companion to Allen's *Crania of the St. John's River*.

Doctor Matthews, a personal friend of the writer, was interested in physical anthropology to the close of his life; but advancing illness obliged him for several years before his death to give up active work in this direction. Shortly before his death he was instrumental in the final stage of retransfer of the anthropological collections from the Army Medical Museum to the Smithsonian Institution;[48] and he left hundreds of drawings and records on parts of these collections. Doctor Matthews' contributions to physical anthropology were as follows:[49]

The curvature of the skull. Trans. Anthr. Soc. Wash., Wash., 1885, III. 171–172.

On composite photography as applied to craniology, by J. S. Billings; and on measuring the cubic capacity of skulls, by Washington Matthews. Read April 22, 1885. Mem. Nat. Acad. Sci., Wash., 1886, III, pt. 2, 13th mem., pp. 103–116, 19 pl.

On a new craniophore for use in making composite photographs of skulls, by John S. Billings and Washington Matthews. Read Nov. 12, 1885. Mem. Nat. Acad. Sci., Wash., 1886, III, pt. 2, 14th mem., pp. 117–119. 4 pls.

Apparatus for tracing orthogonal projections of the skull in the U. S. Army Medical Museum. J. Anat. and Physiol., Edinb., 1886, XXI, 43–45, 1 pl.

An apparatus for determining the angle of torsion of the humerus. J. Anat. and Physiol., Edinb., 1886, XXI, 43–45, 1 pl.

The study of consumption among the Indians. N. Y. Med. Jour., July 30, 1887.

A further contribution to the study of consumption among the Indians. Trans Am. Climatol. Assoc., Washington meeting, Phila., 1888, 136–155.

The Inca bone and kindred formations among the ancient Arizonians. Am. Anthropologist, Wash., 1889, II, 337–345.

Human bones of the Hemenway collection in the U. S. Army Medical Museum. Mem. Nat. Acad. Sci., Wash., 1893, VI, 7th mem., pp. 139–286, 57 pl.

Use of rubber bags in gauging cranial capacity. Am. Anthropologist, 1898, XI, 171–176.

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[47] The Human Bones of the Hemenway collection in the U. S. Army Medical Museum at Washington, by Dr. Washington Matthews, surgeon U. S. Army, "with observations on the Hyoid bones of this collection, by Dr. J. L. Wortman, *Seventh Memoir of the National Academy of Sciences*, Washington, 1891, pp. 141–286, plates 1–59.

[48] See under Smithsonian Institution.

[49] For other publications and a biographical sketch, see Mooney, J., in *American Anthropologist*, 1905, N. S., VII, no. 3, 514–523.

We may now return to the Smithsonian Institution. While conditions during a larger part of the second half of the 19th century were not propitious for active participation by the Institution in anthropological research, nevertheless its publications, as will be seen from the bibliography, included many anthropological contributions by writers both foreign and American.

In 1872 Professor Otis T. Mason became connected with the Institution as collaborator in ethnology.

In 1879, the collections of the Institution increasing, Congress authorized the erection of a separate building for the National Museum, which was completed in 1881. In 1884 Professor Mason became curator of the Department of Ethnology in the Museum, and for almost a quarter of a century was active in this position with most creditable results.[50]

While above all an ethnologist (in the American sense of the word), and while from a deep religious sentiment rather averse to the doctrine of man's evolution, Professor Mason was nevertheless one of the warmest friends of physical anthropology; and his helpful hand was in no small measure responsible for the subsequent auspicious development of the Division of Physical Anthropology in the U. S. National Museum.

But somatology benefited also directly from Professor Mason's scientific contributions. After Squier[51] and Fletcher[52] he described one of the earliest known examples of Peruvian trephining;[53] he had printed for distribution the best contemporaneous classification of the human races; and several of his papers,[54] with his very useful annual contributions to anthropological bibliography, were of real service to our science. He was one of the founders (1879) and for a long time one of the most active members of the Anthropological Society of Washington;

[50] See Otis Tufton Mason, by A. Hrdlička, *Science*, 1908, XXVIII, 746–748; and by Walter Hough, *American Anthropologist*, 1908, x, 661–667.

[51] Squier, (E. George) *Peru*, 8°, N. Y., 1877.

[52] Fletcher, On prehistoric trephining and cranial amulets. *Contributions to N. A. Ethnology*, vol. v, Wash., 1882.

[53] The Chaclacayo trephined skull; with measurements by Dr. Irwin C. Rosse, U. S. A., *Proc. U. S. National Museum*, 1885, 410–412, pl. 22, and list of measurements (appended).

[54] *What is Anthropology?* A Saturday lecture delivered in the U. S. National Museum, March, 1882, 21 pp. The scope and value of anthropological studies, *Proc. A. A. A. S.* 1884, 365–383. The relation of the mound builders to the historic Indians, *Science*, 1884, III, 658–659. Indians in the U. S., June 30, 1886, *Rep. U. S. Nat. Mus.*, 1885, 902–907. Migration and the food quest: A study in the peopling of America, *Smithsonian Rep.*, 1894, 523–539, map.

and his beneficial, stimulating effect on all branches of anthropology was felt at many a meeting of Section H of the American Association.

Among other friends of anthropology in connection with the Smithsonian Institution, now deceased, it is necessary to mention Dr. J. M. Toner and Thomas Wilson.

By the generous endowment of Doctor Toner there were delivered under the auspices of the Institution, betwee 1873 and 1889, a series of lectures on medical and related topics which included two of special interest to physical anthropology, namely, "The Dual Character of the Brain," by Dr. C. E. Brown-Séquard;[55] and "The Clinical Study of the Skull," already mentioned, by Dr. Harrison Allen. Doctor Toner was also one of the founders of the Anthropological Society of Washington.

Thomas Wilson (1832–1902), previously for several years United States Consul to Ghent, Nantes, and Nice, became attached to the National Museum in 1887 as curator of the Division of Prehistoric Anthropology.[56] While abroad, and particularly in France, he became deeply interested in archeological matters and especially in the remains of early man, subjects which occupied his attention throughout the period of his connection with the Museum. Collaterally he was, however, interested in physical anthropology, and a number of his papers deal with matters relating to that science. It is to be regretted that they were not specific enough to be of lasting value.

His publications of interest to physical anthropology are: "A study of prehistoric anthropology" (*Annual Report U. S. National Museum*, 1888); "Man in North America during the Paleolithic period" (ibid.); "Anthropology at the Paris Exposition" (ibid., 1890); and "The Antiquity of the red race in America" (ibid., 1895).

By 1897 the collections of the United States National Museum had grown to such an extent that a new plan of organization of its departments became necessary. By this plan three large departments were established—Anthropology (in the broader sense of the term), Biology, and Geology; and Professor W. H. Holmes was appointed head curator of the Department of Anthropology, which was subdivided into eight sections.[57] Prof. O. T. Mason remained as curator of ethnology, later serving for several years as acting head curator.

[55] Delivered Apr. 22, 1874, published in *Smithsonian Misc. Coll.*, Jan., 1877.

[56] See in Memoriam: Thomas Wilson, by O. T. Mason, *American Anthropologist*, IV, April–June, 1902.

[57] See *Report U. S. National Museum for 1897*, Washington, 1899, p. 6, et seq.

It was Prof. W. H. Holmes, fortunately still living and active, who saw the need of and eventually succeeded in adding to his department, the Division of Physical Anthropology, the first regular division devoted entirely to this branch of science on this continent. With this end in view an arrangement was made with the overcrowded Army Medical Museum, whereby a larger part of the normal somatological material in that institution (approximately two thousand crania) was transferred to the National Museum in 1898–1899. The division came into actual existence in 1903, in charge of the writer; in 1904 another highly valuable instalment of anthropological material (approximately fifteen hundred crania and skeletons) was transferred to the division from the Army Medical Museum, the latter retaining only specimens of pathological or surgical interest; and subsequently, by coöperation with other institutions and through the help of many friends of the Smithsonian, as well as through field exploration and laboratory work, the collections have increased until today they consist of 10,000 racial crania and skeletons, 1500 human and animal brains, and thousands of photographs, casts, and other objects relating to physical anthropology.

In touching on the development of the Division of Physical Anthropology in the National Museum, we have passed by a collateral event of much importance, namely the establishment, in connection with the Smithsonian Institution, of the Bureau of American Ethnology.

The Bureau of American Ethnology was definitely organized in 1879, and placed by Congress under the supervision of the Smithsonian Institution.[58] Several years before this, however, Major Powell, as Director of the Geographical and Geological Survey of the Rocky Mountain Region, began the publication of a series of important volumes called *Contributions to North American Ethnology*, and it was the preparation of these which may really be looked upon as the beginning of the Bureau's existence. Major Powell himself had accomplished important work among the tribes of the Rio Colorado drainage in connection with his geological and geographical researches, and he logically became the first director of the Bureau when separately established.

The Bureau of American Ethnology has not directly occupied itself with somatology; but from the beginning of the important explorations carried on under its auspices collection of skeletal remains of the American Indians was encouraged, and an important part of the present collections in physical anthropology in the U. S. National Museum, pro-

[58] *Handbook of American Indians North of Mexico*, Washington, 1912, I (4th impression), p. 171 et seq.

ceed from such field work. Besides this the publications of the Bureau were from the first open to our branch of science, with the result that at this time they contain a respectable number of more or less direct contributions in this line; and on the whole it may be said that physical anthropology in this country derived much encouragement from this most deserving institution.

Among the members of the Bureau, not now living, several deserve special mention for their services to our branch of science. These are J. C. Pilling, whose bibliographies are of assistance; Dr. W. J. Hoffman, who was interested directly in somatology, reporting, among other writings, on "The Chaco Cranium"[59] and on the Menomoni Indians;[60] Cyrus Thomas, who during his exploration of the mounds collected many crania now part of our collections; and W J McGee, who contributed to our knowledge of the Sioux and Seri Indians, and gave us, with Muñiz, an excellent memoir on Primitive Trephining in Peru.[61]

Papers published by the Smithsonian Institution and its branches relating more or less directly to physical anthropology, and excluding those of living authors, are the following:[62]

1851. Culbertson, T. A. Indian tribes of the upper Missouri. S.R., v.
1852. Stanley, J. M. Catalogue of portraits of North American Indians, and sketches of scenery, etc. S.R., vi.
1855. Letterman, J. Sketch of the Navajo Indians. S.R., x.
1856. Haven, Samuel F. Archeology of the U. S., or Sketches, Historical and Bibliographical, of the Progress of information and opinion respecting vestiges of antiquity in the United States. S.R., viii.
1859. Retzius, A. Present state of ethnology in relation to the form of the human skull. S.R.
1860. Morgan, Lewis H. Circular in reference to the degrees of relationship among different nations. S.M., ii.
1861. Morgan, L. H. Suggestions relative to an ethnological map of North America.

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[59] *Tenth Ann. Report of the U. S. Geol. and Geogr. Survey, of the Terr. for 1876*, Wash., 1878, 453–457, 2 pl.

[60] *Fourteenth Ann. Eeport Bureau Amer. Ethnology.*

[61] The Seri Indians, *17th Ann. Rep. B. A. E.* With M. A. Muñiz, Primitive Trephining in Peru, *16th Ann. Report, B. A. E.*

[62] Abbreviations: S.R., Annual Report of the Smithsonian Institution; S.C., Smithsonian Contributions to Knowledge; S. M., Smithsonian Miscellaneous Collections; P. N. M., Proceedings United States National Museum; B. N. M., Bulletin United States National Museum; R. N. M., Annual Report United States National Museum; C. E., Contributions to North American Ethnology; R. B. E., Annual Report Bureau American Ethnology; B. B. E., Bulletin Bureau American Ethnology.

1862. Stanley, J. M. Catalogue of portraits of North American Indians. S.M., II.
1862. Reid, A. Skulls and mummy from Patagonia. S.R.
1862. Gibbs, G. Ethnological map of the United States. S.R.
1862. Wilson, D. Lectures on physical ethnology. S.R.
1862. Morlot, A. Lecture on the study of high antiquity. S.R.
1862. Quatrefages, A. de. Memoir of Isidore Geoffrey St. Hilaire. S.R.
1862. Reid, A. Human remains from Patagonia. S.R.
1864. Baegert, Jacob. Aboriginal inhabitants of the California peninsula. S.R.
1864. Dean, John. The gray substance of the medulla oblongata and trapezium. S.C., XVI.
1864. Troyon, Fred. On the crania helvetica. S.R.
1864. Gibbs, G. The intermixture of races. S.R.
1864. Morlot, A. The study of high antiquity in Europe. S.R.
1865. Petitot, E. Account of the Indians of British America. S.R.
1866. Gibbs, G. Notes on the Pinneh or Chepewyan Indians of British and Russian America. S.R.
1866. Von Hellwald, F. The American migration; with notes by Prof. Henry. S.R.
1866. Scherzer; Schwarz. Table of anthropological measurements. S.R.
1867. Darwin, C. Queries about expression for anthropological inquiry. S.R.
1867. Pettigrew, J. B. Man as the contemporary of the mammoth and reindeer in middle Europe. S.R.
1867. Meigs, J. A. Description of a human skull from Rock Bluff, Ill. S.R.
1867. Smart, C. Notes on the Tonto Apaches. S.R.
1867. List of photographic portraits of North American Indians in the gallery of the Smithsonian Institution. S.M., XIV.
1868. Broca, P. History of the transactions of the Anthropological Society of Paris, from 1865 to 1867. S.R.
1870. Swan, James G. The Indians of Cape Flattery. S.C., XVI.
1870. Gardner, W. H. Ethnology of the Indians of the valley of the Red River of the North. S.R.
1870. Blyden, E. D. On mixed races in Liberia. S.R.
1871. Grossmann, F. E. Pima Indians of Arizona. S.R.
1872. Broca, P. The troglodytes, or cave dwellers, of the valley of the Vezère. S.R.
1873. Mailly, E. Estimate of the population of the world. S.R.
1873. Gillman, H. The mound-builders and platycnemism in Michigan. S.R.
1874. Mailly, E. Eulogy on Quetelet. S.R.
1874. Schumacher, P. Ancient graves and shell-heaps of California. S.R.
1874. Farquharson, R. J. A study of skulls and long bones, from mounds near Albany, Ill. S.R.
1874. Tiffany, A. S. The shell-bed skull. S.R.
1876. De Candolle, A. Probable future of the human race. S.R.
1876. Gillman, H. Characteristics pertaining to ancient man in Michigan. S.R.
1876. Swan, J. G. Haidah Indians of Queen Charlotte's islands, British Columbia. S.C., XXI.

1876. Brackett, A. G. The Sioux or Dakota Indians. S.R.
1876. Jones, Joseph. Explorations of the aboriginal remains of Tennessee. S.C., XXII.
1877. Galt, F. L. The Indians of Peru. S.C.
1877. Gibbs, George. Tribes of western Washington and northwestern Oregon. C.E., I.
1877. Dall, W. H. Tribes of the extreme Northwest. C.E., I.
1877. Brown-Séquard, C. E. Dual character of the brain. S.M., XV.
1878. Hart, J. N. de. The mounds and osteology of the mound builders of Wisconsin. S.R.
1878. Dall, W. H. On the remains of later pre-historic man. S.C., XXII.
1879. Pratt, R. H. Catalogue of casts taken by Clark Mills, Esq., of the heads of sixty-four Indian prisoners of various western tribes, and held at Fort Marion, St. Augustine, Fla., I.
1879. Havard, V. The French half breeds of the Northwest. S.R.
1880. Mason, Otis T. Record of recent progress in science. Anthropology. S.R.
1881. Powell, J. W. On limitations to the use of some anthropologic data. R.B.E., I.
1881. Mason, Otis T. Anthropological investigations.
1881. Index to anthropological articles in publications of the Smithsonian Institution. George H. Boehmer.
1881. Mason, O. T. Anthropology. (Bibliography of anthropology; abstracts of anthropological correspondence.) S.R.
1882. Fletcher, R. Prehistoric trephining and cranial amulets. C.E., V.
1882. Rau, Charles. Articles on anthropological subjects contributed to the Annual Reports of the Smithsonian Institution from 1863 to 1877, pp. 180.
1885. Donaldson, Thomas. The George Catlin Gallery in the U. S. National Museum, with memoirs and statistics. R.N.M., I.
1886. Mason, Otis T. The Chaclacayo trephined skull. R.N.M.
1887. Thomas, C. Burial mounds of the northern sections of the United States. R.B.E., V.
1887. Porter, J. H. Notes on the artificial deformation of children among savages and civilized peoples. S.R.; R.N.M.
1887. MacCauley, Clay. The Seminole Indians of Florida. R.B.E., V.
1888. Results of an inquiry as to the existence of man in North America during the paleolithic period of the Stone Age. R.N.M.
1888. Niblack, Albert P. The coast Indians of southern Alaska and northern British Columbia. R.N.M.
1888. Wilson, Thomas. A study of prehistoric anthropology: Handbook for beginners. R.N.M.
1890. Evans, John. Antiquity of man. S.R.
1890. Hitchcock, Romyn. The Ainos of Yezo, Japan. R.N.M.
1890. Wilson, Thomas. Criminal anthropology. S.R.
1890. Hitchcock, Romyn. The ancient pit-dwellers of Yezo. R.N.M.
1890. Wilson, Thomas. Anthropology at the Paris Exposition in 1889. R.N.M.
1890. Romanes, George J. Weismann's theory of heredity. S.R.

1891. Thomas, Cyrus. Catalogue of prehistoric works east of the Rocky Mountains. B.B.E., 12.
1893. Rockhill, William Woodville. Notes on the ethnology of Tibet.
1895. Wilson, Thomas. The antiquity of the red race in America. R.N.M.
1895. Hamy, E. T. The yellow races. S.R.
1896. Hoffman, Walter James. The Menomini Indians. R.B.E., XIV.
1897. McGee, W. J. The Siouan Indians. R.B.E., XV.
1897. Muñiz, M. A., *and* McGee, W. J. Primitive trephining in Peru. R.B.E., XVI.
1898. McGee, W. J. The Seri Indians. R.B.E., XVII.
1898. Haeckel, Ernst. On our present knowledge of the origin of man. S.R.
1902. Gaudry, Albert. The Baoussé-Roussé explorations: Study of a new human type, by M. Verneau. S.R.

CONCLUSION

The preceding notes close a rapid and doubtless still imperfect survey of the history of physical anthropology among the English-speaking people of northern America, so far as connected with those no longer living. Interdigitating closely with the more recent chapters of this history is the unfinished, richer, and more organized portion which rests in the hands of those who are still active. This will be dealt with in the final section.

Looking backward into the above history, we see on the whole very creditable, though more or less sporadic and irregular, beginnings, and an irregular, often defective, course, yet not without lasting results. The development proper of the branch belongs to the more recent period—development now based on great and accurately identified collections, nourished by advancing systematic training and regulation of methods, definitely conscious of the immense and complex field of research ahead, and confident that in coöperation with closely allied branches of science physical anthropology is destined to serve worthily these countries and humanity in general.

The influences on and direct participation in American anthropology of various scientific societies and journals, and of foreign men of science, have been mentioned only casually and must be left for a future dissertation on the subject. Suffice to say that the foremost among our societies whose activities favored the advance of physical anthropology were the Anthropological Society of Washington (1879–); the American Ethnological Society of New York (1842–; 1899–); the Boston Society of Natural History (1830–); the American Association for the Advancement of Science, Section *H* (1882–); and the American Anthropological Association (1902–). Among journals especial credit is due to the

American Naturalist (1867–); to *Science* (1880–), and above all to the *American Anthropologist* (1888–), besides which there are the periodical publications of the Smithsonian Institution and its branches, the Reports of the Commissioner of Indian Affairs, the publications of the Peabody Museum of American Archeology and Ethnology, and those of The Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, and other institutions. All these include contributions to physical anthropology.

As to foreign men of science who have most influenced the progress of our science in America, the list includes Blumenbach, Gall, Prichard, Lawrence, Anders Retzius, Broca, Quatrefages, Hamy, Topinard, Barnard Davis, Flower, Kollmann, E. Schmidt, and Rudolph Virchow, besides those of more recent date.

Finally, there are also a number of additional American names connected with isolated publications or noteworthy collections pertaining to physical anthropology, which will deserve a more extended reference in some future publication on this subject. They include men like Emil Bessels, known for his contribution on Eskimo crania[63] and that on "The Human Remains found among the Ancient Ruins of South-Western Colorado and Northern New Mexico;"[64] A. F. Bandelier, who collected a large amount of skeletal material in Bolivia for the American Museum of Natural History, and gave us several publications of interest to physical anthropology; A. F. Chamberlin, whose activities are so recent that they could be as conveniently treated in the last section of this memoir; Dr. Robert Fletcher, the librarian of the Army Medical Museum, who gave us several publications bearing directly on anthropology;[65] H. Gillman, who wrote on crania and platycnemism in Michigan;[66] Dr. George W. Peckham, to whom we owe a contribution

[63] Einige Worte uber die Inuit (Eskimo) des Smith-Sundes, nebst Bemerkungen über Inuit-Schädel, *Archiv für Anthropologie*, 1875–1876, VIII, 107–122.

[64] *Bull. U. S. Geological & Geographical Survey*, 1876, II.

[65] Paul Broca and the French school of anthropology. A lecture deliv. in Nat. Mus., 8vo, Wash., 1882, 32 pp. Also in Saturday Lect., Wash., 1882, 113–142.

On prehistoric trephining and cranial amulets. *Contrib. N. Am. Ethnol.*, Wash., 1882, V, repr., 30 pp.; also abstr., *Tr. Anthrop. Soc.*, Wash., 1882, I, 47–51.

Human proportion in art and anthropometry. Cambridge, 8vo, 1883, 37 pp.

The new school of criminal anthropolo*h*., *Am. Anthrop.*, Wash., 1891, IV; repr. 38 pp.

Anatomy and art. *Bull. Phil. Soc. Wasgy.* 1895, XII; repr. 24 pp.

[66] See p. 176.

on "The Growth of Children" of Milwaukee;[67] M. S. Severance, who gave us a contribution on south-western crania;[68] Paul Schumacher, to whom we owe the large collections of California crania now in the Peabody Museum[69] at Cambridge and the U. S. National Museum; Dr. Corbusier, who measured some of the south-western Indians; and still others.

The history of physical anthropology in Mexico, Central and South America, remains to be written. It cannot compare in richness with that of the United States and Canada. The southern countries have served more as the resources rather than the home of our branch of science. Their literary contributions to physical anthropology, if we exclude those of foreign and the still living authors, are very meager. Ameghino's publications on the subject of early man in Argentina, have been dealt with in another place.[70] In Peru a collection of crania had been made by Raimondi; the foreign contributions to Peruvian anthropology are given in the writer's reports on that country.[71] In Mexico, if we exclude what has been done relatively recently, we have little to mention, but the history of anthropology in that country is being prepared by Dr. Nicolas León.

[67] *6th Annual Report State Bd. of Health of Wisconsin.*

[68] Mark Sibley Severance and H. C. Yarrow—Notes upon human crania and skeletons collected by the expeditions of 1872-74. *Rep. U. S. Geog. Sur.* west of 100th Meridian, Wash., 1879, VII, 391-397.

[69] *Sixteenth Report Peabody Museum*, Cambridge, 1884; III, 233-259.

[70] Early man in South America. *Bull. 52. B. A. E.*, Wash., 1912.

[71] *Smithsonian Misc. Coll.*, 1911 and 1913.

PHYSICAL ANTHROPOLOGY: ITS SCOPE AND AIMS; ITS HISTORY AND PRESENT STATUS IN AMERICA

ALEŠ HRDLIČKA

C Recent History and Present Status of the Science in North America

There is no natural line of demarkation that would separate the older from the more recent history of Physical Anthropology in this country and it is even impossible to draw any artificial line. The division here adopted, into the history of the branch connected with workers who are no more with us and that connected with workers still living, is quite arbitrary and merely for the purpose of facilitating discussion.

The writer would fain have left the task of recording the recent history of progress in this branch to one of his colleagues and had entertained the hope that Professor MacCurdy might be induced to take up the work, but owing to death in the Professor's family and other untoward circumstances, this could not be done. When the writer finally assumed the task he found it embarrassed with many difficulties, and turned for needed support and assistance to his associates on the editorial board of this journal where he met with generous response. Professor MacCurdy in particular gave valuable assistance by placing at the writer's disposal his manuscript notes on "The Academic Teaching of Anthropology" in this country. If notwithstanding the help thus freely tendered the writer and his own prolonged research in the field, the account here presented should not be found free of imperfections, this will be due largely to the loss of precious personal information on certain points that could have been furnished by such men as Brinton, Putnam, McGee and Mason; to the many obstacles in the way of securing, even with the help of the authors themselves, complete errorless bibliographies; and to the difficulty of adequately appraising the important personal influence of various workers, besides that of their literary productions.

The recent history of Physical Anthropology in this country may be said to begin with the coming into existence of the Army Medical Museum in Washington, and the Peabody Museum in Boston, both

established, curiously enough, in the same year (1866). Research in the field received great stimulus from Bowditch's work on children in Boston in 1877; in the foundation of the Bureau of American Ethnology, and the organization of the Washington Anthropological Society, 1879; in the completion of the U. S. National Museum, 1881; in the formation of the section of Anthropology in the American Association for the Advancement of Science, 1882; in the foundation at Washington of the *American Anthropologist*, 1888; in the organization of the Department of Anthropology at Clark University, Worcester, Mass., 1889; in the work undertaken on the Indian tribes by the Department of Ethnology of the Columbian Exposition, Chicago, 1891; in the establishment of Departments of Anthropology at Columbia University, 1892, at the American Museum of Natural History, 1894, and at the Field Columbian Museum, 1892–4; in the institution of the Hyde expeditions to the southwestern and Mexican tribes, for the American Museum of Natural History, 1899; in the organization of the American Anthropological Association, 1902; in the establishment of the Division of Physical Anthropology in the United States National Museum, 1903; and in the foundation the same year, of the Museum and Professorship of Anthropology at the University of California. Additional agencies that contributed to the development of the branch in the United States, were the establishment of collections and courses of instruction in Anthropology at Yale University, at the University of Chicago, and at the University of Minnesota; together with the formation of important gatherings of anthropological material at the Wistar Institute, at the Museum of the University of Pennsylvania, and at other centers of scientific activity. To which varied agencies must be added similar though more limited activities in Canada and Mexico.

As may be appreciated from the outline just given the field which confronts us is rather complex and extensive and it is evident that at best full justice can not be done the subject within the brief scope of this article. Even the method of proper approach of the subject presents unusual difficulties. Chronological treatment of the developments, which were mostly unconnected, except in rough lines, appears almost impracticable, and the only plan promising reasonable success is that of dealing separately and succinctly with institution after institution, organization after organization. This plan has been adopted and, to avoid possible partiality, it was decided to treat of the various institutions and organizations in geographical order, rather than on

any other plan. Institutions which have no anthropological collections and which do not contribute directly to research in physical anthropology, even though more or less attention to the subject be given in their lecture courses, must for the present be omitted from consideration.

CAMBRIDGE, MASSACHUSETTS

The recent as the older history of Physical Anthropology at Cambridge is confined almost entirely to the Peabody Museum and Harvard University.

Associated at the *Peabody Museum* with Professor Putnam, and devoting some of their time to anthropological work, were, as has already been mentioned in Part D, at first Miss C. A. Studley (1882–6), and later (1877–1894) Mr. Lucien Carr.

The next disciple and associate of Professor Putnam who contributed to research in somatology, and who is still living, was George A. Dorsey. After collaborating with Professor Putnam during the World's Columbian Exposition, Chicago, he became in 1894 Assistant in Anthropology at the Peabody Museum, and shortly after that Instructor in Anthropology at Harvard University. In 1896, however, he left Harvard to accept the position of Assistant Curator in Anthropology at the Field Museum of Natural History, Chicago. The course he commenced at Harvard in 1894–5, was in general Anthropology, the first part only being devoted to Somatology.[1]

In 1897 the place vacated by Dorsey was taken by Frank S. Russell, and thenceforward Physical Anthropology received additional attention; Russell's health however soon began to fail, obliging him to curtail his work, until in 1903 he succumbed to pulmonary tuberculosis. His writings are listed in Section B.

Russell's place, after his death, was given to William C. Farabee, who took up almost exclusively the teaching of Physical Anthropology, together with the care of the collections and exhibits in that branch. He in turn resigned in 1912 to accept a position at the Museum of the University of Pennsylvania. His published contributions to Physical Anthropology are as follows:

[1] See Dorsey, George A., History of the Study of Anthropology at Harvard University. *The Denison Quarterly*, IV, No. 2, 1896, 77–97.

For his bibliography see final section of this memoir.

Notes on negro albinism. Science, 1903, XVII, 75.
Inheritance of digital malformations in man. Peabody Mus. Papers, 1905. III, No. 3, 69–77.
The Amazon Expedition of the University Museum. Mus. J., Univ. Pa., Phila. 1916, VII, No. 4, 210–244.

In 1913 Doctor Farabee was succeeded at the Peabody Museum by Dr. E. A. Hooton, the present incumbent of the position, who devotes his time exclusively to somatology.

The history of the development of instruction in Physical Anthropology at Harvard (Peabody Museum) is quite instructive. Teaching in the branch began in 1890, as a small part of the general course in Anthropology.[2] In 1895 the first part of the course was devoted to Somatology and instruction extended to laboratory work which included "the comparison and identification of the bones of man with those of other mammals; the description and measurement of the human skeleton; comparison of corresponding bones in different races; the study of the skin, hair, etc., and anthropometry or the measurements and relations of different parts of the human body." In 1897–8, under Russell, there was a half course of three hours a week devoted to Physical Anthropology, to which was added some laboratory work. In 1911–12, under Farabee, Physical Anthropology had a course extending throughout the session. Hooton, who in 1913 was appointed Assistant Curator and in 1914 Curator of Somatology at the Museum, gave in 1914–15 in addition to the regular course in Physical Anthropology also an advanced course in that branch, and instruction in Criminal Anthropology and Race Mixture. During 1914–16 the old lecture room at the Peabody Museum was converted into the Student Laboratory of Physical Anthropology, while additional facilities were provided for lectures and for research work by advanced students on material in the Museum, at the same time the exhibition and storage space for Physical Anthropology being greatly enlarged. Between 1915 and 1917 new exhibits in Physical Anthropology were installed and the laboratory facilities increased. At present the course in Physical Anthropology at Harvard comprises one two-hour lecture and four hours laboratory work per week throughout the college year, in addition to reading. A piece of original investigation is given the student in the second half of the course. The average number of students is not large (about 9), but more attend the course on Criminal Anthropology and Race Mixture; besides which lectures on

[2] For most of this information the writer is indebted to Doctor Hooton.

Somatology are given during the first month of the general course, which are attended by 75 to 100 students.

In 1917 the *Harvard Medical School* recognized the usefulness of Physical Anthropology by appointing Doctor Hooton Fellow in Anatomy and having him give lectures on Physical Anthropology to the first year anatomy class, to the fourth year course in Orthodontia, and to the Graduate School of Medicine.

Doctor Hooton's published contributions to Physical Anthropology since his advent at Harvard are as follows:

Saxon graveyard at East Shefford, Berks, by Harold Peake and E. A. Hooton. J. Anthrop. Inst., 1915, XLV, 92–103. (Osteological part by E. A. H.)

Notes on skeletal remains from Martha's Vineyard. Am. Anthrop., 1916, N. S. XVIII, 98–104.

Some anthropological comments upon the so-called "herbivorous" and "carnivorous" types of man. Boston Med. & Surg. J., 1916, CLXXIV, No. 4, 127–131.

The evolution of the human face and its relation to head form. Dental Cosmos, 1916, LVIII, No. 3, 272–282.

The relation of physical anthropology to medical science. Med. Rev. of Revs., 1916, XXII No. 4, 260–264.

Preliminary remarks on the archaeology and physical anthropology of Tenerife. Am. Anthrop., 1916, n. s., XVIII, 358–365.

Oral surgery in Egypt during the Old Empire. Harvard African Studies, Cambridge, 1917, I, 29–32.

On certain Eskimoid characters in Icelandic skulls. Am. J. Phy. Anthrop., Wash., 1918, I, 53–76.

Outside of the Peabody Museum the recent history of Anthropology in Boston is confined with one exception to the activities of individuals.

The exception is the *Warren Anatomical Museum* of the Harvard Medical School. This Museum, now housed in a palatial edifice, contains very important osteological collections which include valuable anthropological material. These collections will be described on another occasion. While the Museum as such has given no direct attention to Anthropology, many of its specimens have been described or studied by Professor Thomas Dwight. In addition numerous specimens of Peruvian trephining now in the Museum have been described by Dr. Julio C. Tello by whom they were collected (Prehistoric Trephining among the Yauyos of Peru. Proc. 18th Intern. Congress Americanists, London, 1913, 75–83). The Curator of the Museum, Dr. William F. Whitney, has also published some interesting studies on the skeletal remains in the Peabody Museum (Notes on the

Anomalies, Injuries and Diseases of the Bones of the Native Race of North America. Peabody Museum Reports, III, 433–448, 1886).

The work of Prof. Thomas Dwight, recently deceased (1843–1911),[3] is so modern that it belongs properly to this section, and so substantial that it deserves more than a passing notice.

Professor Dwight was particularly interested in skeletal anomalies and skeletal variation, and for many years was an assiduous worker in these directions. The results are embodied in a series of valuable articles, published partly in American, partly in European journals. He was also actively interested in the development of the Warren Anatomical Museum and added many a valuable specimen to its collections.

His services to Physical Anthropology can be clearly seen from his bibliography relating to this branch. He contributed particularly to our knowledge of the anomalies of the carpal and tarsal bones, and to the variations of the sternum, the scapula, the articular surfaces of the long bones, and the spine. An event of great interest was his discovery in 1904 of a complete bony supracondyloid bridge on a human arm bone. This, so far as known a unique specimen of its nature, is preserved in the Warren Museum.

Curiously, Professor Dwight like so many eminent men brought up in his time, had certain reservations on the subjects of man's antiquity and evolution. His publications of interest to Physical Anthropology follow:

A contribution to the anatomy of the jugular foramen. Am. J. Med. Sciences, 66, 1873.

Remarks on the brain, illustrated by the description of the brain of a distinguished man (Chauncy Wright). Proc. Am. Acad. Arts and Sciences, 1877, XIII, 210–215.

The identification of the human skeleton; Commun. Mass. Med. Soc., 1878, XII, 165–218.

The sternum as an index of sex and age. J. Anat. & Phys., 1881, XV, 327–330.

The significance of bone structure. Mem. Bost. Soc. Nat. Hist., 1886, IV, 1–15.

Account of two spines with cervical ribs, one of which has a vertebra suppressed, and absence of the anterior arch of the atlas. J. Anat. & Phys., 1887, XXI, 539–550.

The range of variation of the human shoulderblade. Am. Naturalist, July, 1887, 627–638.

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[3] Obituary notices in *Bost. M. & S. J.*, 1911, 465–467; *J. Am. M. Ass.*, 1911, 1067; and in *Anat. Rec.*, 1911, V, 531–539 (with a bibliography—not quite complete).

The significance of the third trochanter and of similar bony processes in man. J. Anat. & Phys., 1890, XXIV, 61–68.

The closure of the cranial sutures as a sign of age. Bost. Med. & Surg. Journ., 1890, CXXII.

The sternum as an index of sex and age. J. Anat. & Phys., 1890, XXIV, 527–535

Irregular union of the first and second pieces of the sternum in man and apes. J. Anat. & Phys., 1890, XXIV, 536–542.

Fossa praenasalis. Am. J. Med. Sciences, Feb., 1892.

Observations on the psoas parvus and pyramidalis: a study of variation. Proc. Am. Philos. Soc., 1893, XXXI, 117–123.

The range and significance of variation in the human skeleton. The Shattuck Lecture. Pub. of the Mass. Med. Soc., 1894, 8°, 29 pp.

Statistics of variations, with remarks on the use of this method in Anthropology. Anat. Anz., 1894, X, 209–215.

Methods of estimating the height from parts of the skeleton. Med. Record, 1904, XLVI, 293–296.

The significance of anomalies. Am. Naturalist, 1895, XXIX, 130–135.

Notes on the dissection and brain of the chimpanzee "Gumbo." Mem. Bost. Soc. Nat. Hist., 1895, V, 31–52.

Remarkable skulls. J. Bost. Soc. Med. Sci., 1899, IV, 52–54.

Description of the human spines showing numerical variation, in the Warren Museum of the Harvard Medical School. Mem. Bost. Soc. Nat. Hist., 1901, V, 237–312.

Os intercuneiforme tarsi, Os paracuneiforme tarsi, Calcaneus secundarius. Anat. Anz., 1902, XX, 465–472.

The intercuneiform bone of the foot. A new bone. J. Med. Research, 1902, VII.

A separate subcapitatum in both hands, Anat. Anz., 1904, XXIV, 253–255.

The diagnosis of anatomical anomalies causing malposition of the head, and distortion of the face. J. Med. Research, 1904, XII, 17–39.

A bony supracondyloid process in man. With remarks about supracondyloid and other processes from the lower end of the humerus. Am. J. Anat., 1904, III, 221–228.

The size of the articular surfaces of the long bones as characteristic of sex: an anthropological study. Am. J. Anat., 1904–5, IV, 19–31.

Mutations. Science, 1905, n. s. XXI, 529–532.

Numerical variation in the human spine. Anat. Anz., 1906, XXVIII, 33–40, 96–102.

Variations of the bones of the hands and feet. A clinical atlas. 8°, Phila. and London, 1907. 25 pp, 36 pl.

Concomitant assimilation of the atlas and occiput with the manifestation of an occipital vertebra. Anat. Record, 1909, III, 321–333.

A criticism of Pfitzner's theory of the carpus and tarsus. Anat. Anz., 1909 XXXV, 366–70.

Description of a free Cuboides secundarium, with remarks on that element, and on the Calcaneus secundarius. Anat. Anz., 1910, XXXVII, 218–224.

Free Cuboides secundarium on both feet, with some further remarks on Pfitzner's theory. Anat. Anz., 1911, XXXIX, 410–414.

The individual workers in Boston who during the last few decades have contributed materially to Physical Anthropology and who are still with us, are Prof. William Z. Ripley, sociologist, anthropologist and economist, and Dr. Dudley Allen Sargent, director of physical training at the Harvard University.

Wm. Z. Ripley, since 1901 professor of political economy at Harvard, lectured from 1893 to 1901 in sociology and anthropology in Columbia University, but occupied also during the larger part of this period the chair of assistant professor of sociology, and eventually that of professor of economics, at the Massachusetts Institute of Technology. In the fall of 1896 he delivered before the Lowell Institute of Boston a series of lectures on "Physical Geography and Anthropology," an outgrowth of which was, in 1899, the publication of his well known volume on "The Races of Europe,"[4] supplemented by a bibliography of the anthropology and ethnology of Europe.[5] Other contributions of Professor Ripley to the subject of Physical Anthropology are as follows:

Une carte de l'indice céphalique en Europe. L'Anthrop., 1896, VII, 513–525.
Acclimatization. Bibliography. Appleton's Popular Science Monthly, N. Y., 1896, XLVIII, 662–675, 779–793.
Ethnic influences in vital statistics. Pub. Amer. Stat. Ass., Boston, 1896, v. 18–40.
The form of the head as influenced by growth. Science, 1896, n. s., III, 888–889.
The racial geography of Europe. Appleton's Popular Science Monthly, N. Y., 1897–9.
Deniker's classification of the races of Europe. J. Anthrop. Inst., 1898, n. s., I, 166–173, map.
The European population of the United States. The Huxley Memorial Lecture for 1908. J. Royal Anthrop. Inst. Gr. Brit. & Ire., 1908, XXXVIII, 221–240.
Races in the United States. Atlantic Monthly, 1908, 745–759.
Physical education in colleges. North Am. Rev., Feb. 1883, CXXXVI, 166.

The work of Dr. Dudley A. Sargent, at the Harvard University, has been directed entirely toward the physical development and training of the students. It has given rise to an extensive introduction of his system in American colleges and has resulted in much improvement in the physical condition of the students. Regrettably, however, the attention given to the practical side of the work has been so preponderant that its scientific possibilities received but little attention. New measurements were adopted and new instruments developed; the observations are generally carried on by men and women who, even if

[4] 8°, N. Y., D. Appleton & Co.
[5] Published by the Public Library of the City of Boston.

medical graduates, have little knowledge of anthropology; and the results are that a large proportion of the observations obtained remains outside the realm of anthropology, have no claim to scientific accuracy and are indeed lost to our science. Doctor Sargent himself, however, has published a number of papers which are of distinct value to physical anthropology. The following is a list of these:

The physical proportions of the typical man. Scribner's Mag., July, 1887, 3–17.
The physical characteristics of the athlete. Scribner's Mag., Nov., 1887, 541–561.
Anthropometric apparatus, with directions for measuring and testing the principal physical characteristics of the human body. 4°, Cambridge, Mass., 1887.
The physical development of women. Scribner's Mag., Feb. 1889, 172–185.
Anthropometric charts for different ages, male and female, ranging from 10 to 26 years of age. Cambridge, Mass., 1893.
Physical state of the American people. In "The United States of America," 1894, II, 452–475.
Physical exercise and longevity. North Am. Rev., May, 1897.

WORCESTER, MASSACHUSETTS

One of the earliest modern foci of physical anthropology in this country developed at *Clark University*. This University was in fact the first to recognize Anthropology (general) as "a fit and proper subject for post-graduate researches and investigations leading to the degree of Ph.D., and the first university to confer such a degree."[6]

In 1888 Dr. G. Stanley Hall, who though primarily a psychologist has always been keenly interested in anthropological problems, became Professor of Psychology as well as President of the University, and under his influence a year later we find established at the University, as a part of the Department of Psychology, a sub-Department of Anthropology, with Dr. Franz Boas as Docent.

For about six years prior to this, Doctor Boas had been active in the ethnology and anthropology of the Eskimo and of the Indian tribes of northwestern Canada. While at Clark University he continued partly in the same direction, but began also, under the influence doubtless of the work of Henry P. Bowditch, to pay close attention to the problems connected with growth of children. With the assistance of G. M. West, A. F. Chamberlain, T. L. Bolton and J. F. Reigard, over 3,000 children of Worcester were measured. Some of the results of this

[6] Chamberlain (A. F.), Anthropology (at the C. U.). Clark Univ., 1889–1899, Decennial Celebration volume, 8°, Worcester, Mass., 1899, 148–160.

work were in 1892 discussed by Doctor Boas in Science (see bibliography, p. 292), while the main results were published the same year by Dr. West. West's report appeared under the title "Anthropometrische Untersuchungen über die Schulkinder in Worcester, Mass., Amerika," in the *Archiv für Anthropologie*, 1893, XXII, 13–48.

In November, 1890, Doctor West was appointed Fellow in Anthropology at the University, and devoted himself to consideration of the physical side of the science, taking, as already mentioned, a prominent part in anthropometric investigations on the children of the Worcester schools. During the summer of 1891 he was engaged in anthropological measurements of the Indian tribes of Quebec and the maritime provinces of Canada. Appointed Assistant in Anthropology in 1891, he continued in that position until the close of the academic year 1891–2, when he became associated with Doctor Boas in the sub-Department of Anthropology of the World's Columbian Exposition, having charge of the anthropological investigations during Doctor Boas' absence in Europe. After the Exposition he was for a short time connected, as somatologist, with the Department of Anthropology of the Field Columbian Museum.

Doctor West in addition to the already mentioned report on the examination of the children at Worcester, has published the following contributions to physical anthropology:

The status of the negro in Virginia during the colonial period. Thesis for Doctorate., N. Y., 1890, 76 pp.
The growth of the breadth of the face. Science, 1891, XVIII, 10–11.
Eye-tests on school children. Am. J. Psychol., 1892, IV, 595–596
The growth of the body, head, and face. Science, 1893, XXI, 2–4.
The anthropometry of American school children. Mem. Internat. Cong. Anthrop., 1893 (Chicago, 1894), 50–58.
The growth of the human body. Educ. Rev., 1896, XII, 284–289.

In 1891–2, after Doctor Boas was called from Clark University to the Department of Anthropology of the World's Columbian Exposition, at Chicago, Mr. A. F. Chamberlain, then a fellow in anthropology at the University, became Lecturer there on that subject. In 1911, he was made a full professor of anthropology at the Clark University.

Professor Chamberlain (✠1914) was essentially an ethnologist, linguist and bibliographer. His services to physical anthropology consisted mainly of numerous annotated references to publications in this branch of science which he published during many years in the *American Anthropologist*. As an associate of Boas, however, he took

part in the measurement of the children at Worcester, and later superintended measurements of the school children at Toronto. In 1891 he also carried on, under the auspices of the British Association for the Advancement of Science, anthropological investigations among the Kootenay of Canada, which included measurements and somatological observations of the people. His courses at the University as well as his special lectures dealt in part with the more general aspects of physical anthropology. His published contributions relating more or less directly to this branch are:

Observations on the relation of physical development to intellectual ability, made on the school children of Toronto, Canada. Science, 1896, n. s. IV, 156–159.

African and American; the contact of the negro and the Indian. Science, 1891, XVII, 85–90.

Physial Characteristics [of the Kootenay Indians]. Eighth Report on the North-Western tribes of Canada, Proc. B. A. A. S., London, 1892, 38–45.

Human physiognomy and physial characteristics in folk-lore and folk-speech. J. Am. Folk-Lore, 1893, VI, 13–24.

Anthropology in universities and colleges Pedagogical Seminary, Oct., 1894, III, 48–60.

Primitive Anthropometry and its Folk-lore. Proc. A. A. A. S., 1894, XLIII, 348–349.

Darwin and Lincoln. An anniversary address. Evening Gazette, Feb. 8, 1898, Worcester, Mass.

The "child type." Pedagogical Seminary, 1899, V, 471–474.

Report and history of the Department of Anthropology, Clark University, 1889-1899. Decennial Celebration Volume, Clark University, 1889–1899, 148–160.

Some recent anthropometric studies. Pedagogical Seminary, 1901, XIII, 239–257.

The American Indian elements in the Philippines. Am. Antiquarian, 1902, XXXIV, 97–100; also Handbook American Indian, B. A. E., 1910, II, 51–53.

The child: a study in the evolution of man. 8°, London, 1903.

Iroquois in northwestern Canada. Am. Anthrop., 1904, VI, 459–463.

Anthropological activities of Clark University, 1902–1906. Am. Anthrop., 1906, VIII, 491–493.

Since the death of Professor Chamberlain no appointment to the chair of Anthropology has been made at Clark University, though some lectures on the subject have been given by Dr. A. N. Gilbertson and others. Beginning with 1910, there is published under the able editorship of Prof. G. Stanley Hall *The Journal of Race Development*, which includes articles of direct value to physical anthropology. Of interest to our branch is also Professor Hall's *Adolescence*, 1904, 2 vols. (See *Am. Anthrop.*, VI, 539.)

THE PHILLIPS ACADEMY, ANDOVER, MASSACHUSETTS

In 1901 a Department of Archaeology was founded in this Academy by Mr. and Mrs. Robert Singleton Peabody, and in connection with this Department Dr. Charles Peabody, Mr. W. K. Moorehead, and Dr. Alfred V. Kidder have conducted explorations in Maine, New Brunswick, Missouri, Arkansas, and in the Pueblo region, during which careful attention was given to the collection of skeletal material. The excavations of the cemeteries at Pecos, N. M., by Doctor Kidder have been particularly fruitful in this respect; though not yet completed they have already yielded parts of upwards of 650 skeletons, material which is well dated and will eventually constitute a standard series of much value. Since 1917 there is also attached to the Department Dr. Carl E. Guthe, who has recently completed an interesting study on the Boston Russian Jews:

Notes on the cranial index of Russian Jews in Boston. Am. J. Phy. Anthrop., Wash., 1918, I, No. 2.

SMITH COLLEGE, NORTHAMPTON, MASSACHUSETTS

Dating from 1892 the chair of the Department of Zoölogy of this College has been held by Dr. H. H. Wilder, who besides his other studies has given considerable attention to Physical Anthropology. He has been particularly interested in the study of the epidermic ridge patterns of the human palms and soles, and in their value as racial criteria, as important data for the study of heredity, and as a practical means of personal identification. Some of these investigations have been carried on in conjunction with his wife, Mrs. Inez Whipple Wilder. Mention may be made, too, of his work on the plastic restoration of faces on skulls, including both recent and prehistoric types, and the excavation of skeletons of Western Massachusetts Indians with the study of their modes of interment. Beginning in 1905 Professor Wilder has offered a course in general anthropology and since 1912–13 also a brief general graduate course in physical anthropology.

The list of Professor Wilder's publications touching on Physical Anthropology is as follows:

On the disposition of the epidermic folds upon the palms and soles of primates. Anat. Anzeiger, 1897, XIII, 250–256.

Palms and soles. Am. J. Anat., 1902, I, No. 4, 423–441.

Scientific palmistry (not exactly what its name denotes). Pop. Sci. Monthly, Nov. 1902, 41–54.

Palm and sole impressions, and their use for purposes of personal identification. Pop. Sci. Monthly, Sept. 1903, 385–410.

The restoration of dried tissues with especial reference to human remains. Am. Anthrop., 1904, VI, 1–17.

Racial differences in palm and sole configuration. I. Am. Anthrop., 1904, VI, 244–293 (Maya, Chinese, American Negroes); II. Am. Anthrop., 1913, XV, 189–207 (Liberian Negroes).

Duplicate twins and double monsters. Am. J. Anat., 1904, III, No. 4, 387–472.

Zur körper chen Identität bei Zwillingen. Anat. Anz., 1908, XXXII, 193–200.

Palm and sole studies. Biol. Bull., Feb.-Mar. 1916, XXX, No. 2, 135–172, and No. 3, 211-252.

The position of the body in aboriginal interments in Western Massachusetts. Am. Anthrop., 1917, XIX, 372–387. (In conjunction with R. W. Whipple.)

Restoration of a cliff-dweller. Am. Anthrop., 1917, XIX, 388–391.

Personal identification. 8vo, Boston, 1918, 374 pp., numerous illustrations.

A former student of Professor Wilder, Miss Inez Whipple (now Mrs. Harris H. Wilder), published "The ventral surface of the mammalian chiridium, with especial reference to the condition found in man," in Schwalbe's *Zeits. f. Morph. u. Anthrop.*, 1904, VII, 261–368. The conditions observed in the lower mammals and especially the primates, furnish a key to the more complex conditions found in man, and the whole work is of importance for the study of the human palms and soles.

Another student of Professor Wilder, Miss Marian Vera Knight, has recently published a memoir on "The craniometry of southern New England Indians," 4°, Yale University Press, New Haven, Conn., 1915, 35 pp.

YALE UNIVERSITY, NEW HAVEN, CONNECTICUT

The development of Physical Anthropology at Yale University is essentially connected with Doctor MacCurdy, Instructor in Anthropology at the University 1898–1900, Lecturer in Anthropology and Curator of the anthropological collections 1902–10, Assistant Professor of Prehistoric Archeology and Curator of the Anthropological Collections 1910—. Lectures touching on Physical Anthropology were also given at the University, until his death, by Wm. G. Sumner, Professor of Political and Social Science, but they extended to little more than general information on the subject.[7]

[7] Consult in this connection Geo. G. MacCurdy: Extent of instruction in anthropology in Europe and the United States. Rep. *Science*, Dec. 22, 1899, n. s., X, 910–917; Teaching of Anthropology in the United States. Ibid., Feb. 7, 1902, XV, 211–216; Progress in Anthropology at Peabody Museum, Yale University. *Am. Anthrop.*, 1903, n. s., V, 65.

At present, instruction in Anthropology is grouped with that in Social Sciences. The courses of special interest to our branch in the Graduate School for the year 1917–18, were that of Prof. H. B Ferris, on "The Natural History of Man" (two hours weekly); and that of Asst. Prof. George Grant MacCurdy, on "Physical Anthropology" (three hours weekly, first term).

Doctor MacCurdy, a student of Manouvrier, has shown special interest in the subject of man's antiquity. He served for many years as Secretary of the American Anthropological Association; fitted out a laboratory of physical anthropology at the Peabody Museum of Yale University, and has taken care of the collections of the Museum, which include some valuable series of racial crania and skeletons. His publications relating to physical anthropology are as follows:

Le poids et la capacité du crâne, etc. (avec N. Mohylianski). Bull. Soc. d'Anthrop. Paris, 1897, VIII, 408–420.
Twenty years of Section H. Science, 1902, n. s. XV, 532.
Some recent Paleolithic discoveries Am. Anthrop., 1908, X, 634–643.
Eolithic and Paleolithic man. Am. Anthrop., 1909, XI, 92–100.
Recent discoveries bearing on the antiquity of man in Europe. Smith. Rep. for 1909, Wash., 1911, 531–583.
Somatology and man's antiquity. Records of the Past, 1911, X, 322–331; copies in Scientific American Supplement, Feb. 10, 1912.
Pleistocene man from Ipswich (England). Science, 1912, n.s. XXXV, 505–507.
Ancestor hunting: The significance of the Piltdown skull. Am. Anthrop., 1913, XV, 248–256.
The man of Piltdown. Am. Anthrop., 1914, XVI, 331–336.
Interglacial man from Ehringsdorf near Weimar. Science, 1914, n.s. XL, 766-768.
Human skulls from Gazelle Peninsula. Anthrop. Publs. Univ. Pa. Museum, Phila., 1914, VI, No. 1, 1–21 (10 plates).
Neandertal man in Spain; the lower jaw of Bañolas. Science, 1915, n. s. XLII, 84–85; also Am. Anthrop., 1915, XVII, 759-762.
The revision of *Eoanthropus dawsoni*. Science, Feb. 18, 1916, n. s. XLIII, 228–231.

At present plans are being prepared for a new and more ample building for the Peabody Museum, and it can be confidently expected that with better laboratory and storage facilities the steady development of physical anthropology at Yale University will be assured.[8]

Professor Ferris published recently a memoir on "The Indians of Cuzco and the Apurimac," *Mem. Am. Anthrop. Ass.*, 1916, III, No. 2, 57–148.

[8] For a note on a bequest which will favor a sustained development of the branch at Yale, see p. 130. No. I. of this Journal.

An event of considerable importance to physical anthropology in connection with Yale University, was the Peruvian Expedition of 1912–15, conducted under the joint auspices of the University and the National Geographic Association, by Hiram Bingham, Professor of Latin-American History at Yale. This expedition resulted in the gathering of many portraits and measurements of the natives, with considerable skeletal material, and gave rise to a number of publications of direct interest to physical anthropology. These are:

Bingham (Hiram)—The discovery of prehistoric human remains near Cuzco, Peru; Bowman (Isaiah)—The Geologic relations of the Cuzco remains; Eaton (Geo. F.)—Report on the remains of man and of lower animals from the vicinity of Cuzco, Peru; Am. J. Sci., 1912, XXXIII, 297–333.

Bingham (Hiram)—The investigation of the prehistoric human remains found near Cuzco, Peru, in 1911; Eaton (Geo. F.)—Vertebrate remains in the Cuzco gravels; Gregory (Herbert E.)—The gravels at Cuzco, Peru; Am. J. Sci., 1913, XXXVI, 1–29.

Eaton (Geo. F.)—The collection of osteological material from Machu Picchu. Mem. Conn. Acad. Arts & Sci., 1916, v, 96 pp.

The main collection of human skeletal material of the Bingham Expeditions is now under examination by Professor MacCurdy.

In this connection mention may also be made of the work of Dr. Jay W. Seaver, who, while serving as Lecturer on Physiology and Anthropometry in the New Haven Normal School of Gymnastics, published, in 1909, a creditable work on *Anthropometry and Physical Examination* (8°, New Haven, Conn., 191 pp., with bibliography). The book, which appeared in several editions, "was to place in the hands of directors of gymnasia, who were expected to examine people and prescribe exercise for them, a manual that should be a constant guide in securing measurements, and an efficient help in pointing out the vital matters that should be considered in making a physical diagnosis, or an estimate of the organic condition of the various parts of the body and their habits of action." The instruments and methods advocated were largely such as are used by Sargent of Harvard.

NEW YORK

With two exceptions, interest in physical anthropology in New York State centers in New York City. The exceptions are *Buffalo* and *Cold Spring Harbor*.

In Buffalo, two craniological collections have been accumulated which deserve mention. One is that in possession of Dr. A. L. Benedict, while

the other and more important is preserved in the Museum of the Buffalo Society of Natural Sciences. Both collections consist essentially of Iroquois material.

Spring Harbor will be referred to in another part of this section.

New York City

In New York City as elsewhere the earliest manifestations of interest in Physical Anthropology appear among anatomists and physicians; but until the latter part of the last century they amount to little more than attempts at the formation of two or three cranial collections. An exception to this is however to be noted in the work of Dr. Edward C. Spitzka, a prominent neurologist who made comparative studies of the brain, and paid attention to various medico-legal problems of anthropological interest. Dr. Spitzka's publications that deserve to be mentioned in this place are the following:

Contributions to encephalic anatomy. J. Nerv. & Ment. Dis., Chic., 1877, IV, repr. 11 pp.

The comparative anatomy of the pyramidal tract. J. Comp. Med. & Surg., N. Y., 1886, VII; repr. 46 pp.

The legal disabilities of natural children justified biologically and historically. A series of articles in the Alienist & Neurologist, 1899–1901.

Regicides, sane and insane. N. Y. Med. J., 1903, LXXVIII; repr. 74 pp.; Political assassins: are they all insane? J. Ment. Path., N. Y., 1902, III, repr. 32 pp.; Regenticides not abnormal as a class; a protest against the chimera of degeneracy. Phila. Med. J., 1902, IX; repr. 24 pp.

The State Pathological Institute

The State Pathological Institute of New York, designed as an institution of research, was established in New York City in 1895, under the direction of Dr. Ira Van Gieson. Its objects were, broadly speaking, the investigation from all points of view and with the most modern methods and instruments, of the abnormal classes of the population of New York State, and particularly the insane. The staff consisted besides the Director of a number of Associates, each of whom had charge of a definite field of investigation. The writer had the honor to be the Associate in Anthropology. His anthropological researches began among the insane at the Middletown Hom. State Hospital for the Insane in 1894. In 1895 he was offered the position of associateship in the Institute, and the larger part of 1896 was spent in Europe in preparation for the new position, including studies in anthropometry

under Manouvrier, medico-legal and related courses at the Paris University, and visits to the principal European insane asylums, penal institutions and Museums. On his return he assumed the duties at the Pathological Institute, established a laboratory and prepared a plan of investigations, the ambitious object of which was to determine the "normal standard of the American people, or, at least, such a standard, if this be possible, of the native population of the State of New York; and at the same time to examine all the abnormal classes of the population;" to find what anatomical, physiological and psychological abnormal characters are peculiar to each of these classes, or, if that be impossible, to show which abnormalities predominate in each class; to determine how each of these classes differs from the normal and the one from the other; to find explanations, and determine as far as possible the causation, of the observed variations; and eventually to compare the results with similar ones obtained on the same classes among other peoples.[9]

Due to the extent of the work, it was planned to secure in each institution for the insane, etc., one or two collaborators who after proper instruction would proceed with the work in that particular institution. The examinations were subdivided into parts such as could easily be carried out at one time without tiring the subjects or the observer. A visit was made to the principal institutions for the abnormal classes all over the state, and within a year over twenty collaborators were secured from the medical staffs of these institutions who proceeded with the investigations.

In the course of two and a half years, records were secured on over 11,000 individuals, including all classes of the insane, the epileptic, the idiot and to some extent also the criminal. But by this time there also developed two serious conditions. One was the slacking of the work at some of the asylums, due to changes in staff and in some cases to diminished personal interest in the research. The other and even more serious difficulty was the growing appreciation of the absence of normal standards, with which the results obtained on the abnormal classes could be contrasted. This necessitated the extension of studies on the one hand to the "normal" classes, which however were soon found to be

[9] Hrdlička, A., Pathological Institute of the New York State Hospitals, Department of Anthropology. Outline of its Scope and Exposition of the Preliminary Work. *Bull. State Hospitals*, II, No. 1, 1–18, Utica, N. Y., Jan. 1897. Also in *Contributions of Pathological Inst. N. Y. State Hospitals*, Utica, N. Y., 1898, No. 4.

far from such; while on the other hand there loomed up the absolute necessity of extensive preliminary studies on skeletal material of both "normal" and abnormal classes, which would help to throw light on many of the conditions encountered. The search for this skeletal material led the writer to years of most profitable association with Prof. George S. Huntington, head of the Department of Anatomy of the College of Physicians and Surgeons; while the need of deeper insight into normal humanity led to his search for such among the American Indians.

Investigations in these extension lines were, however, barely begun when grave difficulties developed for the Pathological Institute, which shortly led to a greatly diminished state appropriation and an almost complete change of policy. Investigations ceased, accumulated data, material and instruments were packed up and removed from the sumptuous quarters of the Institute at No. 1 Madison Avenue, to the Wards' Island State Hospital, and the staff dispersed. By the end of 1909 the Institute, which started with such bright prospects of scientific accomplishment in every department, became little more than a laboratory serving a few material needs of the state hospitals.

The College of Physicians and Surgeons, New York City (later the Medical Department of Columbia University)

In 1893 Prof. George S. Huntington, head of the Department of Anatomy of the College, began, on the basis of some older heterogeneous collections, the gathering of human skeletal material, which in the course of time has become of great value to Physical Anthropology. The new collections consisted of the bones of the subjects used up in the dissecting room, and the principal bones of the body were identified by tags bearing the number of the subject. The nationality, sex, age and last disease of each individual were recorded.

In 1896 permission to work on these collections and to assist in further increasing the same, was kindly given by Professor Huntington to the writer. Certain measurements of the body before dissection were introduced, and the collection was assiduously carried on until by 1902 the "bone room" contained the well-identified remains of upwards of 1,200 individuals. Studies on the collection continued until the writer's departure from New York, and extensive series of data of much value were secured, most of which regrettably, due to lack of facilities for elaborating the data, still await publication.

The collections of Professor Huntington's Department include also a series of Indian mummies and skulls which have not been described; and a collection of brains which served as the foundation for various studies, most of which of direct anthropological interest, by Dr. Edward Anthony Spitzka (son of Edward C. Spitzka), at that time Fellow in Anatomy under Professor Huntington, and later Professor of Anatomy in the Jefferson Medical College, Philadelphia.

During the last few years, due to lack of appropriations, this great osteological collection has fallen somewhat into disuse, notwithstanding the efforts of Professor Huntington who has always appreciated its importance and to whom American anthropology is deeply indebted for its creation.

Doctor Spitzka's publications of anthropological interest, which may perhaps best be mentioned in this connection, are as follows:

Spitzka (Edward Anthony)—The mesial relations of the inflected fissure. Observations upon one hundred brains. Proc. Assoc. Am. Anat., 1901, 105–115. N. Y. Med. J., Jan. 5, 1901, 6–10.

A preliminary communication of a study of the brains of two distinguished physicians, father and son. Proc. Assoc. Am. Anat., XIV Session, 1900, 70–92, Phila. Med. J., 1901, VII, 680–688.

The brains of two more celebrities. A letter to the Phila. Med. J., 1901, VII, 791.

A contribution to the fissural integrality of the paroccipital. Observations upon one hundred brains. Proc. Assoc. Am. Anat., 1901, 118–124, J. Mental Path., June, 1901.

The redundacy of the preinsula in the brains of distinguished educated men. N. Y. Med. Record, June 15, 1901, 940–943.

Is the central fissure duplicated in the brain of Carlo Giacomini, anatomist. A note on a fissural anomaly. Phila. Med. J., Aug. 24, 1901.

(With Carlos F. MacDonald)—Report of the post-mortem examination of Leon F. Czolgosz, alias Fred Nieman, the assassin of President McKinley. N. Y. Med. J.; N. Y. Med. Record; N. Y. Med. News; Phila. Med. Jour., Jan. 4, 1902; J. of Mental Path., I, Nos. 4–5; Am. J. Insanity, 1902, LVIII, 3; Lancet (London), Feb. 1 & 8, 1902.

Brain-anatomy and "degeneracy" theories. A reply to Dr. E. S. Talbot's criticism in the Phila. Med. J., Jan. 18. Phila. Med. J., Jan. 25, 1902, 152.

Contributions to the encephalic anatomy of the races. First paper: Three Eskimo brains, from Smith's Sound. Am. J. Anat., 1902, I, 25–71.

The anatomy of the human insula in its relation to the speech-centers according to race and individuality. Proc. Assoc. Am. Anat., Dec. 1902; Am. J. Anat., 1903, II, 2, IX–X.

Brain-weights of brothers and sisters. Science, 1903, XVII, 516.

A study of the brain-weights of men notable in the professions, arts and sciences. Phila. Med. J., May 2, 1903.

The brain of Professor Laborde. Science, 1903, XVIII, 346.

Brain-weights of the Japanese. Science, 1903, XVIII, 371–373.

The execution and post-mortem examination of the three VanWormer brothers at Dannemora, N. Y., Oct. 1, 1903. Daily Med. J. (N. Y.), Nov. 20, 1903; The Daily Medical (N. Y. and London), Feb. 8, 1904, I, 1.
Brain-weights of brothers (II). Science, 1903, XVIII, 699.
Assassins not necessarily insane. Leslie's Weekly, Dec. 17, 1903, 596 & 603.
A study of the brain of the late Major J. W. Powell. Am. Anthrop., 1903, V, 585–643.
The brains of three brothers. Proc. Assoc. Am. Anat., XVII Session, 1903, in Am. J. Anat., 1904, III, lv–v; Hereditary resemblances in the brains of three brothers. Am. Anthrop., 1904, VI, 307–312.
Post-mortem examination of the late George Francis Train. Daily Medical, Feb. 15, 1904.
The brain-weight of Dr. Taguchi. Am. Anthrop., 1904, VI, 366–367. (Correction in:) ibid., 577–578; and Science, 1904, XX, 215.
The brain of a Swedish statesman. Science, 1904, XX, 612–613.
Report of a study of the brains of six eminent scientists and scholars belonging to the American Anthropometric Society; together with a brief description of the skull of one of them. Proc. Assoc. Am. Anat., XVIII Session, Phila. 1904, in Am. J. Anat., 1905, IV, iii–iv.
Also numerous notes as Editor, Dep't of "Anatomy, Normal and Pathological," in the Medical Critic, N. Y., 1902–3.
Preliminary note on the brains of the Andaman and Nicobar Islands. Proc. Am. Phil. Soc., Phila., 1908, XLVII, 51–58.

American Museum of Natural History, New York

The history of Physical Anthropology at the American Museum is one of more than common interest. It begins, strictly speaking, with the establishment at the Museum of the Department of Anthropology and the appointment, in the spring of 1894, of Prof. F. W. Putnam as Curator of the Department.

The following years showed a most remarkable and unequaled record of development of Anthropology in all its branches at the Museum, which continued until the resignation of Professor Putnam in 1903.

Anthropology in general was included in the scheme of the American Museum from its beginning, but until the early nineties attention was practically restricted to some collections in archeology. During 1892–3 two important expeditions, each of several years duration, were initiated by Bandelier in Bolivia and Peru, and by Lumholtz in Mexico, both resulting in later years in the acquisition of valuable somatological material. In 1894 the new Department of Anthropology was established, "in order to illustrate the history of man in the same way as we are showing the history of animal life."[10] Besides Professor Putnam

[10] *Ann. Report Am. Mus. Nat. Hist. for 1895*, p. 17.

as Curator, the staff comprised Dr. Franz Boas, as Assistant Curator of the Ethnological Division, and Marshall H. Saville, Assistant Curator of Archeology. New explorations were organized, extending to the southwest and Mexico (the Hyde Expedition); to the northwest and Asia (the Jesup North Pacific Expedition); to the Eskimo, the California tribes; the Arapaho, and to Oregon; while archeological field work was conducted in the Trenton gravels, among the village sites of Long Island and New York, in Florida and other localities. Nearly all of these expeditions and researches resulted in the acquisition of material of value to Physical Anthropology.

The beginning of direct work in Physical Anthropology at the Museum may perhaps be placed in 1898, when an expedition was made to Mexico for the exclusive purpose of securing measurements, photographs, casts and skeletal material from some of the Sierra Madre tribes. This work, which was to supplement the Lumholtz Expedition, was suggested by and intrusted to the writer, and the trip was made part of the way in the company of Doctor Lumholtz. The results were so encouraging, that the next year (1899) arrangements made by Professor Putnam enabled the writer to initiate similar investigations in connection with the Hyde Expeditions among the southwestern tribes. The year after that the writer was placed in charge of the physical anthropology of the Hyde Expedition, and with the whole-hearted support of Professor Putnam and the Hyde family, was enabled to extend the work so as to include all the tribes from southern Utah and Colorado to the states of Michoacan and Morelos in Mexico. These investigations were completed by 1903, when the writer was called to organize the Division of Physical Anthropology at the National Museum.

A noteworthy event in connection with the American Museum in 1902, which had its influence on physical anthropology in this country, was the XIIIth International Congress of Americanists.

In 1903, Professor Putnam resigned his curatorship at the American Museum, to accept an equally responsible position at the University of California. His place was taken by Doctor Boas, who however was obliged to devote most of his attention to the ethnological collections and research of the Museum and to his teaching duties at Columbia, with the result that Physical Anthropology at the Museum fell somewhat into neglect. Doctor Boas in turn left the Museum in 1905, to be succeeded the year following by Dr. Clark Wissler, the present Curator.

The human osteological collections of the Museum continued, however, to be added to, and eventually interest in Physical Anthropology

was gradually revived. Recently (1916) Mr. Louis R. Sullivan was appointed Assistant Curator in Anthropology, to have charge of the laboratory in Physical Anthropology of the Museum and of the collections and exhibits belonging to this division.

An event of considerable importance to Physical Anthropology at the American Museum was the selection, in 1908, of Prof. Henry Fairfield Osborn as the President of the Trustees of that Institution. Professor Osborn, while not an anthropologist, has always been deeply interested in everything that relates to the variation of the human race and its evolution. He has published a number of important treatises on heredity which are of interest to anthropology, and within recent years has produced three works of considerable direct value to this branch. These and his other writings of anthropological interest are as follows:[11]

Osborn (Henry Fairfield)—The Cartwright Lectures for 1892 before the Alumni of the College of Physicians and Surgeons, New York: Present problems in evolution and heredity. The contemporary evolution of man. Med. Rec., 1892, XLI, 197–204; Am. Naturalist, 1892, XXVI, 455–481.

Discovery of a supposed primitive race of men in Nebraska. Century Mag., 1907, LXXVIII, No. 3, 371–375.

The age of mammals. 8°, N. Y., 1910, i–xvii, 635 pp.

Skull measurements in man and the hoofed mammals. Science, 1912, XXXV, 596; Ann. N. Y. Acad. Sci., 1913, XXII, 341–342.

Men of the old stone age. Amer. Mus. J., 1912, XII, No. 8, 279–295.

Men of the old stone age, their environment, life and art. 8°, N. Y., 1915. 2d ed., 1916, i–xxvi, 545 pp.

The origin and evolution of life. 8°, N. Y., 1917, i–xxxi, 322 pp.

Doctor Wissler, while primarily an ethnologist, is closely interested in Physical Anthropology, and has made several contributions to the subject. His and Doctor Sullivan's publications in this line are:

Wissler (Clark)—Correlation of mental and physical tests. Supplement to Psychol. Rev., No. 16; also Columb. Univ. Contr. to Phil., Psychol. & Educ., N. Y. 1901, IX, No. 2, 1–62.

Growth of boys. Am. Anthrop., 1903, V, 81–88.

(With F. Boas)—Statistics of growth. Report U. S. Comm. Educ. for 1904, Wash., 1905, 25–132.

(With Walter Channing)—The hard palate in normal and feeble-minded individuals. Anthropological Papers, Am. Mus. Nat. Hist., 1908, I, part 5, 283–349.

[11] The bibliography of Professor Boas is given under Columbia University; that of the writer under Smithsonian Institution.

Measurements of Dakota Indian children. Ann. N. Y. Acad. Sci., 1911, xx, 355–364.
The American Indian. 8°, N. Y., 1917 (principally ethnological).
Sullivan (Louis R.)—Variations in the glenoid fossae. Am. Anthrop., 1917, xix, 19–23.
Growth of the nasal bridge in children. Am. Anthrop., 1917, xix, 406–409.

An auspicious recent addition to the anthropological staff of the American Museum is that of Prof. J. H. McGregor of Columbia University, as Research Associate in Anthropology. Though an active member of the faculty of Columbia University and primarily a paleontologist, Professor McGregor is deeply interested in the morphology of the early types of man.

Professor Boas, though separated from the American Museum, has continued his interest in the valuable skeletal material gathered by the Jesup North Pacific Expedition, and during the last three years has had Dr. Bruno Oetteking assisting him in working over this material at the Museum. The results are to appear eventually as the final volume of the *Memoirs of the Jesup Expedition.* Dr. Oetteking since his connection with the Museum has published the following papers relating to Physical Anthropology:

Suggestions for cataloguing of anthropological material. Am. Anthrop., 1916, xviii, 398–410.
Living races of man. New Intern. Encyc., 1916.
Herman Klaatsch. Am. Anthrop., 1916, xviii, 422–425.
The study of anthropology in America. The Nation, 1917, civ, 542–543.
Preliminary remarks on the skeletal material collected by the Jesup Expedition. Proc. XIX Int. Cong. Amer. (1915), Wash., 1917, 621–624.

Finally, this sketch should not close without reference to the work of Prof. W. K. Gregory of the Department of Vertebrate Paleontology of the American Museum who, though not a member of the anthropological staff of the Museum, is working in close coöperation therewith. For several years he has devoted the greater part of his time to the study of the primates from an evolutionary and phylogenetic point of view. His earlier papers dealt with the Lemuroidea, but recently he has made important contributions to the phylogeny of living and extinct anthropoids, with special reference to the origin of man. His publications bearing on anthropological problems are as follows:

I. On the relationship of the Eocene Lemur Notharctus to the Adapidae and to other primates. II. On the classification and phylogeny of the Lemuroidea. Bull. Geol. Soc. Amer., 1915, xxvi, 419–446.

Studies on the evolution of the primates. Bull. Am. Mus. Nat. Hist., 1916, XXXV, Art. XIX, 239–355.
Evolution of the human face. Am. Mus. J., 1917, XVII, 376–388. Also in Dental Cosmos, 1918, LX, 115–125.

The present Board of Trustees of the American Museum has shown much interest in the development of somatological collections and research, so that there are good prospects for renewed important activities in this line.

Columbia University

The Department of Anthropology of Columbia University was established in 1896 and from that date until 1902 was under the direction of James McKeen Cattell, Professor of Psychology, but its development is essentially associated with Dr. Franz Boas.

Prior to 1896 a brief introductory course in Anthropology was given by Dr. Livingston Farrand, but this touched only slightly on the physical aspects of the subject. In 1896 Doctor Boas was appointed Lecturer on Physical Anthropology, and in 1899 he became Professor of Anthropology (in the broader sense) at the University, a position which he still holds. Previously, Doctor Boas had served, as has already been partly mentioned, under the Committee of the British Association appointed for the purpose of collecting information on the North-Western tribes of Canada (1888); as Docent of Anthropology at Clark University (1882–92); as Chief Assistant of the Department of Anthropology of the Chicago Exposition (1891–4); and as Assistant Curator in Ethnology at the American Museum of Natural History (since 1894).

The Columbia University catalogue for 1896–7 announced several courses in anthropology, giving as the personnel of the department the names of Livingston Farrand, Instructor; Franz Boas, Lecturer; and William Z. Ripley, Prize Lecturer. Of the several courses offered, two were in Physical Anthropology—one a general introductory course with lectures, essays and discussions, two hours weekly; the other a more advanced course including the application of statistical methods to biological problems, three hours weekly, with lectures, reports and laboratory work. Both these courses were given by Doctor Boas.

As Doctor Boas' call to Columbia was almost simultaneous with his call to the American Museum of Natural History, the anthropological collections of the latter institution became available to Columbia students, which obviated the necessity of forming similar collections at the

University. When however Professor Boas in 1905 resigned from the Museum, a lack of anthropological material at hand in the University became a disadvantage which hindered, no doubt a full development there of the branch of Physical Anthropology.

The present anthropological staff in Columbia University includes Professor Boas, who is the Executive Officer of the Department, and several associates. Some eighteen courses are listed, two of which (the same as those above mentioned) are in physical anthropology and are still conducted by Doctor Boas. The collections of the American Museum are, as before, available to students of the Department, but as the two institutions are far apart, their use is restricted. Moreover, Doctor Boas' researches of latter years have been predominantly statistical and that phase of the subject has in consequence been given more attention at the University than other aspects of physical anthropology.

It is to be regretted that Professor Boas' activities were never devoted fully to physical anthropology, much of his time being given to linguistics, mythology and general ethnology of the American aborigines. This, and the limited laboratory facilities at Columbia in conjunction with lack of collections, resulted in the issue from the University, during the last two decades, of a number of original workers in linguistics and ethnology, but none in somatology.

Some years ago Professor Boas delivered two courses of lectures on physical anthropology before the students of the College of Physicians and Surgeons (now Medical Department of the Columbia University), with the object of interesting them more closely in the subject, but due to the preoccupation of this class of men with their own exacting studies the effort was not successful; and the same may be said of his more recent effort in like direction and under somewhat similar conditions, in Mexico.

The published contributions of Professor Boas to physical anthropology are both numerous as well as important. They cover a wide range and in general are characterized by a distinct leaning towards a mathematical rather than anatomical treatment of the subject matter. His bibliography, so far as it touches our branch, follows:

Indian skulls from British Columbia. Trans. N. Y. Acad. Sci., 1888–1889, VIII, 4–6.

Deformation of heads in British Columbia. Science, 1889, XIII, 364–365.

First General Report on the Indians of British Columbia. 5th Rep. N. W. Tribes of Canada, 1889, 5–97 (801–893). (These papers are in the main ethnological, but each contains parts dealing with physical anthropology.)

Cranium from Progreso, Yucatan. Proc. Am. Antiq. Soc., 1889–90, VI, 350–357.
A modification of Broca's stereograph. Am. Anthrop., 1890, III, 292–293.
Second general report on the Indians of British Columbia. 6th Rep. N. W. Tribes of Canada, 1890, 562–715.
Physical characteristics of the Indians of the North Pacific Coast. Am. Anthrop., 1891, IV, 25–32.
Mixed races. Science, 1891, XVII, 179.
Anthropological investigations in schools. Science, 1891, XVII, 351–352.
Third Report on the Indians of British Columbia. 7th Rep. N. W. Tribes of Canada, 1891, 2–43.
The growth of children. Science, 1892, XIX, 256–257, 281–282; XX, 351–352.
Anthropologie in Amerika. Corr.-Bl. d. d. anthrop. Ges., 1892, XXIII, 114–116.
Remarks on the theory of anthropometry. Quart. Pub. Am. Stat. Assn., 8vo, 1893, III, 569–575.
The Indian tribes of the Lower Fraser River. 9th Rep. N. W. Tribes of Canada, 1894, 1–11.
The correlation of anatomical or physiological measurements. Am. Anthrop., 1894, VII, 313–324.
The anthropology of the North American Indian. Mem. Internat. Cong. Anthrop., 8vo, 1894, 37–49.
The half-blood Indian and anthropometric study. Pop. Sci. Monthly, 1894, XLV, 761–770.
Human faculty as determined by race. Proc. Am. Assn. Adv. Sci., 1894, XLIII, 301–327.
On Dr. William Townsend Porter's investigation of the growth of the school children of St. Louis. Science, 1895, n. s., I, 225–230; Corr.-Bl. d. d. anthrop. Ges., 1895, XXVI, 41–46.
The growth of first-born children. Science, 1895, I, 402–404.
Fifth report on the Indians of British Columbia. 10th Rep. N. W. Tribes of Canada, 1895, 2–62; charts of detailed measurements.
Die Beziehungen des Längenbreitenindex zum Längenhöhenindex an Schädeln. Verh. d. Berl. Ges. f. Anthrop., Ethn. u. Urg., 1895, XXVII, 304.
Zur Anthropologie der nordamerikanischen Indianer. Verh. d. Berl. Ges. f. Anthrop., Ethn. u. Urg., 1895, XXVII, 366–411.
Anthropological observations on the Mission Indians of Southern California. Proc. Am. Assn. Adv. Sc., 1895, XLIV, 261–269.
Form of the head as influenced by growth. Science, 1896, n. s. III, 929–931.
Sixth report on the Indians of British Columbia. 11th Rep. N. W. Tribes of Canada. 1896. 1–17
The limitations of the comparative method of anthropology. Science, 1896, IV, 901–908.
The growth of children. Science, 1897, V, 570–573.
The growth of Toronto children. Rep. U. S. Com. Educ. for 1896–97, Wash., 1898, 1541–1599.
Physical characteristics of the tribes of British Columbia. 12th Rep. N. W. Tribes of Canada, 1898, 628–666 (with Livingston Farrand). Summary of the work of the Committee, Ibid., 667–682, 12 charts (Index to the 12 Reports, Ibid., 683–688).

Some recent criticisms of physical anthropology. Am. Anthrop., 1899, I, 98–106.
The cephalic index. Am. Anthrop., 1899, I, 448–461.
Anthropometry of Shoshonean tribes. Am. Anthrop., 1899, I, 751–758.
A. J. Stone's measurements of natives of Northwest territories. Bull. Am. Mus. Nat. Hist., 1901, XIV, 53–68.
The relations between the variability of organisms and that of their constituent elements. Science, 1902, XV, 1–5.
Statistical study of anthropometry. Am. Phys. Ed. Rev., 1902, VI. 174–180.
The foundation of a national anthropological society. Science, 1902, XV, 804–809.
The development of the department of anthropology of the American Museum of Natural History. Am. Mus. J., 1902, II, 47–53.
Rudolf Virchow's anthropological work. Science, 1902, XVI, 441–445.
Heredity in head form. Am. Anthrop., 1903, V, 530–538.
The history of anthropology. Science, 1904, XX, 513–524; Cong. Arts & Sci., 1906, V, 468–482.
Statistics of growth. Rep. U. S. Com. of Educ. for 1904, Wash., 1905, 25–132.
The horizontal plane of the skull and the general problem of the comparison of variable forms. Science, 1905, XXI, 862–863.
Anthropometry of Central California. Bull. Am. Mus. Nat. Hist., 1905, XVII, 347–380.
Physical types of the Indians of Canada. An. Arch. Rep., 1905–1906, 84–88.
The measurements of variable quantities. Archiv. Phil. Psychol. & Sci. Methods, June, 1906, No. 5.
Heredity in Anthropometric traits. Am. Anthrop., 1907, IX, 453–469.
On crania of Lower Fraser River Indians. Publ. Jesup North Pacific Exped. 1908, II, 188–190.
Determination of the coefficient of correlation. Science, 1909, XXIX, 823–824.
Race problems in America. Science, 1909, XXIX, 839–849.
Changes in bodily form of descendants of immigrants. Senate document No. 208, 61st Congr., 2d Session, Wash., 1910, 113 pp.; also issued by Columbia Univ. Press, 1912, abstr. in Am. Anthrop., 1912, XIV, 530–562; also Abstracts of Reports of the Immigration Comm., Wash., 1911, 5–58; also, Veränderungen der Körperform der Nachkommen von Einwanderern in Amerika. Zeitschrift für Ethnologie, 1913, XLV, 1–22.
Anthropology. Cyclop. of Education (edited by Paul Monroe, Ph.D.), 1911, I, 132–134.
Instability of human types. Papers on inter-racial problems communicated to the First Universal Races Congress, London, 1911, 99–103.
The growth of children. Science, 1912, XXXVI, 815–818.
Growth. Cyclop. of Education, 1912, III, 187–190.
Erwiderung auf Dr. H. Ten Kate's Nachtrag zum Artikel "Schädelform und Umwelt-einfluss." Archiv f. Rassen-u. Ges.-Biol., 1912, IX, 628–630.
Die Analyse anthropometrischer Serien, nebst Bemerkungen über die Deutung der Instabilität menschlicher Typen. Archiv f. Rassen-u. Ges.-Biol., 1913, X, 290–302.
Einfluss von Erblichkeit und Umwelt auf das Wachstum. Zeitsch. f. Ethnol. 1913, XLV, 615–626.

The head-forms of Italians as influenced by heredity and environment. Am. Anthrop., 1913, xv, 163–188 (with Helene M. Boas).

Remarks on the anthropological study of children. Trans. XVth Intern. Congr. Hyg. & Demogr., 1912, repr. 1–8.

On the variety of lines of descent represented in a population. Am. Anthrop., 1916, xviii, 1–9.

Eugenics. Scientific Monthly, Nov., 1916, 471–478.

New evidence in regard to the instability of human types. Proc. Nat. Acad. Sc., 1916, ii, 713–718.

Modern populations of America. Proc. II Pan-Am. Sc. Congr., Wash., 1917, 9–15. Repr. in Sc. Amer., 1917

The relation between civilization and stature. J. Sociol. Med., xviii, 397–401.

Between 1903 and 1904 we find a second Professor of "Anthropology" at Columbia University, in the person of Dr. Livingston Farrand. Doctor Farrand was however interested essentially in the more psychological aspects of Anthropology. His contributions to somatology are limited to the following:

Farrand (Livingston) (with J. McK. Cattell)—Physical and mental measurements of the students of Columbia University. Psychol. Rev., N. Y., 1896, iii, 618–648.

(With F. Boas)—Physical characteristics of the tribes of British Columbia. 12th and final Report of the Committee appointed by the B. A. A. S. to investigate the physical characters, etc. of Northwestern tribes of the Dominion of Canada, Proc. B. A. A. S., London, 1898, 629–644.

For a time Dr. Clark Wissler was also connected with the Department of Anthropology at Columbia, assisting partly in somatological work. One of the results was his paper on Correlation of physical and mental observations on the students.

New York University, New York City

Since 1910, there exists, in connection with the School of Pedagogy and the Graduate School of the University, a Department of Pedagogical Anthropology, in charge of Prof. Paul R. Radosavljevich, who since 1914 has been assisted by Dr. Aristine P. Munn-Recht, Dean of the Women of the University. The objects of this department are:

1. To acquaint the graduate students, as thoroughly as may be possible, with the value and results of anthropometric observations on children and adolescents;

2. To train the graduate class in anthropometry, particularly that of children;

3. To train the class in biometric and other methods; and finally

4. To assist the ablest students in carrying on original investigations in child study.

The course is divided into:

a. Anthropological Study of School Children;

b. Practical Course in Pedagogical Anthropology, Normal and Abnormal Children; and

c. Research.

Professor Radosavljevich, with a number of his graduates and students, have contributed the following to physical anthropology:

Carley (Leon A.)—Mental, physical and moral delinquency, and courts. A thesis for Ph.D., 1914 (partially published in the Am. J. Common Law and Criminology). Includes measurements of about 500 inmates of N. J. Reformatory, Rahway, N. J.

Radosavljevich (P. R.)—Pedagogical anthropology. Proc. IVth Intern. Cong. for School Hygiene, Buffalo, N. Y., Aug. 25–29, 1913, 21 pp.

Professor Boas' New theory of the form of the head—a critical contribution to School Anthropology. Am. Anthrop., 1911, XIII, 394–436.

Changes in bodily form in descendants of immigrants. Science, 1912, XXXV, 821–4.

Die Entwicklung des Kindes innerhalb der Schuljahre. Rep. "Monatshefte für Pädagogik," etc., 1913, XIV, 87–98, 123–7, 159–64.

Growth and education. "Prosvetni Glasnik," organ of the Serbian Ministry of Education, Belgrade, 1900, 322–42, 408–24, 630–64, 707–21; in Serbian.

Anthropological study of school children. "Nastavni Vjestnik," organ of the Croatian Professors, Zagreb, 1910, 569-82, 653–82, 724–47, in Croatian.

Anthropology from the scientific point of view. "Učitelj," organ of the Teachers' Assoc. of Serbia, Belgrade, 1911, 9–17, 100–109, 281–92; in Serbian.

Sex differences in the light of physical anthropology. Ibid., 1912, 87–104, 180–205; in Serbian.

Pedagogic anthropology in the United States. Proc. XIXth Intern. Cong. Amer., Wash., 1917, 606–10.

Study of the American and the European child. Proc. 2nd Pan-Amer. Sci. Cong., Wash., 1917, I, 124–25.

Stevenson (Beatrice L.)—Constancy or variability in Scandinavian type. Intern. Arch. für Ethnol., 1914, XXII, 22 pp.

Conclusions regarding the head index of Scandinavians in Europe and America. Ibid., 1915, XXIII, 17 pp.

Socio-Anthropometry; a thesis for Ph.D., 12mo, Boston, 1915, 153 pp.

The eye and hair color in children of the old Americans. Proc. XIXth Int. Congr. Amer., Wash., 1917, 603–605.

Museum of the American Indian, Heye Foundation, New York

The Museum of the American Indian, Heye Foundation, owes its origin to a small collection of archeological and ethnological objects brought together by George C. Heye, Esq., about fifteen years ago. Research in American archeology and ethnology was begun in 1904, and has continued without cessation; the Museum was incorporated in 1916. From the outset the utmost care has been devoted to the collection and preservation of skeletal remains of American aborigines. Unprepared at the beginning to give the necessary attention to material of this kind, with respect both to its permanent care and study, Mr. Heye generously presented an important part of the collections in physical anthropology to the United States National Museum. Latterly such remains have been retained with the view of having them form the nucleus for a division of physical anthropology. Such a division was actually established in 1916, under the charge of Dr. James B. Clemens, assisted by Dr. Bruno Oetteking; but while additional skeletal material is constantly being accumulated, exigencies growing out of the war prevented the development of the new section as had been planned, so that the utilization of the collections and publication of results are held in abeyance.

Cold Spring Harbor

The Station for Experimental Evolution at Cold Spring Harbor was established by the Carnegie Institution in 1904 as a part of the Department of Experimental Biology of the Institution. Its objects were "the study of heredity, development, and evolution by experimental methods,"[12] and the work, essentially biological in the usual sense of the word, gradually broadened so as to include the human family. The station has since its inception been under the direction of Dr. Charles B. Davenport, and the studies of man so far undertaken were carried on by Doctor Davenport, with the assistance of Mrs. Davenport and other collaborators. His publications that are of interest to physical anthropology, as furnished by himself, follow:[13]

(With Gertrude C. Davenport)—Heredity of eye color in man. Science, 1907, XXVI, 589–592.

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[12] *Carnegie Year Book*, III, Wash., 1905, p. 37.

[13] Additional publications of related interest by Dr. Davenport and his associates, are given in the various *Year Books of the Carnegie Institution*.

(With Gertrude C. Davenport)—Heredity of hair form in man. Amer. Nat., 1908, XLII, 341–349.
(With Gertrude C. Davenport)—Heredity of hair color in man. Amer. Nat., 1909, XLIII, 193–211.
(With Gertrude C. Davenport)—Heredity of skin pigmentation in man. Amer. Nat., 1910, XLIV, 641–672.
Heredity in relation to eugenics. N. Y., 1911.
(With David F. Weeks)—A first study of heredity in epilepsy. J. Nerv. & Ment. Dis., Nov. 1911.
The origin and control of mental defectiveness. Pop. Sci. Monthly, Jan. 1912, 87–90.
The trait book. Eugenics Record Office Bulletin, Feb. 1912, No. 6, 52 pp.
(With Florence H. Danielson)—The hill folk. Report on a rural community of hereditary defectives. Eugenics Record Office Memoir No. 1, 1912, 4°, 56 pp., 3 charts.
(With A. H. Estabrook)—The Nam family. A study in Cacogenics. Eugenics Record Office Memoir, No. 2, 1912, 4°, 85 pp., 4 charts.
Man from the standpoint of modern genetics. Science, 1914, XXXIX, 223–224.
Heredity of skin color in negro-white crosses. Carnegie Institution of Wash., 1913, Publ. No. 188.
The feebly inhibited: (1) Nomadism or the wandering impulse, with special reference to heredity. (2) Inheritance of temperament. Carnegie Inst. of Wash., 1915, Publ. No. 236.
Skin color of mulattoes. J. Hered., 1914, V, 556–558.
The value of scientific genealogy. Science, 1915, XII, 337–342.
A dent in the forehead. J. Hered., 1915, VI, 163–164.
(With H. S. Conard)—Hereditary fragility of bone (fragilitas osseum, osteopsathyrosis). Eugenics Record Office Bull. No. 14, 1915.
The hereditary factor in pellagra. Arch. Inter. Med., 1916, XVIII, 1–29.
The personality, heredity and work of Charles Otis Whitman, 1843–1910. Amer. Nat., 1917, LI, 5–30.
The effect of Race intermingling. Proc. Amer. Phil. Soc., 1917, LVI, 364–368.
Inheritance of stature. Genetics, 1917, II, 313–389.
(With Eliz. B. Muncey)—Huntington's Chorea in relation to heredity and eugenics. Amer. J. Insanity, 1916, LXXIII, 195–222.

In 1910, Mrs. E. H. Harriman established at Sag Harbor and in virtual connection with the Station for Experimental Evolution, the "Eugenics Record Office," for the purpose of research in human heredity and eugenics. This Office, which like the Station is under the direction of Doctor Davenport, has published a series of Memoirs and Bulletins all of which are of direct interest to physical anthropology. Most of these publications have already been given in Doctor Davenport's bibliography; the additional ones are as follows:

Eugenics Record Office Bulletins

Bull. 1—Goddard (Henry H.). Heredity of feeblemindedness. 8°, 1911, 14 pp.
2—Symposium. The study of human heredity. 8°, 1911, 17 pp.
3—Cannon (Gertrude L.) and A. J. Rosanoff. Preliminary report of a study of heredity in insanity, etc. 8°, 1911, 11 pp.
5—Rosanoff (A. J.) and Florence I. Orr. A study of heredity of insanity in the light of the Mendelian theory. 8°, 1911, 221-261.
8—Cotton (Henry A.). Some problems in the study of heredity in mental diseases. 8°, 1912, 59 pp.
10A—Laughlin (Harry H.). I. The scope of the Committee's work. Report of the Committee to study and to report on the best practical means of cutting off the defective germ-plasm in the American population. 8°, 1914, 64 pp.
10B—Laughlin (Harry H.). II. The legal, legislative and administrative aspects of sterilization. Report of same Committee as in bulletin 10 A. 8°, 1914, 150 pp.
15—Finlayson (Mrs. Anna Wendt). The Dack family. A study in hereditary lack of emotional control. 8°, 1916, 46 pp.
16—Muncey (Elizabeth B.). A study of the heredity of Pellagra in Spartanburg County, South Carolina. 8°, repr. from Archives of Internal Med., XVIII, No. 1, 31-75.

PHILADELPHIA, PENNSYLVANIA

Since the death of Harrison Allen, progress in Physical Anthropology in Philadelphia has been almost entirely limited to increase of collections; there is at present no active center for the branch in that city, formerly a home of our science, a condition which urgently calls for a remedy.

Academy of Natural Sciences, Philadelphia

Clarence B. Moore. The earlier history of Physical Anthropology in connection with the Academy has been recorded in Section B of this memoir, and little remains to be added, except that within the last three decades the older collections of the Institution have been enriched by numerous crania and other skeletal material resulting from the explorations of Mr. Clarence B. Moore.

Mr. Clarence B. Moore, one of the foremost archeologists of the country, has contributed substantially to the progress of physical anthropology in the United States, by his careful and extensive collections of skeletal material in the old mounds of Florida, Alabama, Arkansas, Mississippi and Kentucky. During recent years such material has been added by Mr. Moore to the collections of the United States

National Museum, and has already served to elucidate some important problems in the anthropology of the southeastern states. Several publications resulting from the study of the material have appeared in the Journal of the Academy.

Dr. W. L. Abbott

Another great friend of physical anthropology in Philadelphia, though not a working anthropologist himself, is Dr. W. L. Abbott. During his many years of biological explorations in southeastern Asia, Borneo, Sumatra and other islands, Doctor Abbott has collected not only hundreds of photographs of the natives and some of their skeletal material, but has conferred a great service on anthropology as well as on biology by the collection of a most important series of skeletons and brains of the anthropoid and other apes. These precious specimens now form parts of the collections of the divisions of Physical Anthropology and Mammalogy in the U. S. National Museum. Doctor Abbott is still active and there is a strong hope that further material assistance will be rendered by him to physical anthropology.

The Wistar Institute of Anatomy and Biology, Philadelphia

Remarks on the earlier history of Physical Anthropology in connection with the Wistar Institute will be found under Section B.

The more recent developments in this direction in the Institute, consist of a very practical, attractive and useful rearrangement of the older collections and exhibits; of the addition to the collections of important series of primate skeletal material, of a dozen or more complete skeletons of the Chinese, and of a series of fifty Philippino brains; and in the acquisition, in 1915, of the large osteological collections from the Museum of the University of Pennsylvania.

Recently the important series of Eskimo crania and bones at the Wistar Institute has been studied by Dr. Ernest W. Hawkes and Mr. Ralph Linton, and the results were published by Doctor Hawkes under the title of "Skeletal Measurements and Observations on the Point Barrow Eskimo with Comparisons from Other Eskimo Groups," in the *American Anthropologist*, 1916, XVIII, 203–244.

Connected with the Wistar Institute since 1906 as Professor of Neurology, is Dr. Henry H. Donaldson, one of the foremost investigators in his line, who has made several contributions of value to Physical Anthropology. These are:

The growth of the brain; a study of the nervous system in relation to education. 1897, 12°, London, 374 pp.

A comparison of the white rat with man in respect to the growth of the entire body. Repr. from Boas Memorial Volume, N. Y., 1906, 5–26.

Brain and nervous system in rat and man. Address before the Phila. Neurological Soc. Jan. 1911, J. Nerv. & Ment. Dis., 1911, XXXVIII, 257–266.

An anatomical analysis of growth. Trans. XVth Intern. Congr. Hyg. & Demog. (held Wash., 1912); repr. 6 pp.

In addition Professor Donaldson and his associates have published in the *American Journal of Anatomy* and the *Anatomical Record*, a number of articles on the growth and on the central nervous system of animals, particularly the albino rat, which are of interest to the student of human growth and of the human brain and nervous system.

A mention must also be made of the collection of brains of distinguished individuals which is in the possession of the Wistar Institute. A portion of this collection was studied by Dr. E. A. Spitzka (see p. 286).

Spitzka also established a collection of brains in the anatomical department of the Jefferson Medical College of Philadelphia, while Professor of Anatomy at that Institution.

The University Museum, Philadelphia

Until 1915 the University Museum possessed a valuable collection of skeletal remains from some of the northern tribes of Mexico, the Eskimo, the Melanesians, and other races, and for a time there was some thought that, under the able directorship of Dr. Geo. B. Gordon, there might eventually be developed at the Museum a Division devoted to physical anthropology. In the year mentioned, however, on account of inadequate storage and laboratory facilities, and with the view of a concentration of effort in this scientific field, rather than a dispersion of the collections and a divided effort, it was decided by the Museum authorities to transfer the entire collection to the Wistar Institute of Anatomy and Biology, of Philadelphia, which already possessed important collections of skulls and other skeletal remains.

Between 1913 and 1917 Dr. William C. Farabee, conducted for the Museum an expedition to the tribes of northern South America, which resulted in the acquisition of numerous observations of value to Physical Anthropology. These are being prepared for publication.

Important excavations are now being conducted for the Museum in Egypt by the Eckley B. Cox Jr. Expedition, which is expected to re-

sult in the acquisition of valuable well dated skeletal material from the earlier dynasties; and a recent expedition for the Museum to the northwestern Eskimo will doubtless result in the collection of additional skeletal remains from this important group of American aborigines.

BALTIMORE

Baltimore, though a great and rich city, and though possessing one of the foremost universities and medical schools in the country—the Johns Hopkins—has, strangely, never been a fertile field for anthropological research or even collections. Probably this is to be explained by its proximity to Washington.

Within late years, nevertheless, conditions have been slowly changing for the better. Prof. Franklin P. Mall, whose recent untimely death is a great loss to American science, was always a warm friend of Anthropology, and for several years before his death had associated with himself, in his researches on human development, a trained anthropologist. He also published, however, personally a number of papers which had a direct bearing on physical anthropology. They are as follows:

On the transitory or artificial fissures of the human cerebrum. Am. J. Anat., 1903, II, 333-340.

On the angle of the elbow. Am. J. Anat., 1905, IV, 391-404.

On ossification centers in human embryos less than 100 days old. Am. J. Anat., 1906, V, No. 4, 433-458.

On measuring human embryos. Anat. Rec., 1907, I, 129-140.

On several anatomical characters of the human brain, said to vary according to race and sex, with especial reference to the weight of the frontal lobe. Am. J. Anat., 1909, IX, 1-32.

On the development of the human heart. Am. J. Anat., 1912, XIII, 249-298.

On the frequency of localized anomalies in human embryos and infants at birth. Am. J. Anat., 1917, XXII, 49-72.

Professor Mall's first collaborator in anthropology was Dr. Michal Reicher, of Polish birth, who in 1915 returned to his country to take part in the war. The results of his investigations have not as yet been published. In 1917, Dr. Reicher's place was given to Dr. Adolf H. Schultz, of Switzerland, who since has published the following papers of anthropological bearing:

Ein paariger Knochen am Unterrand der Squama occipitalis. Anat. Rec., 1917, XII, 357-362.

An appeal to physicians for embryological material, especially from the negro. Leaflet, 4 pp., Carnegie Inst. of Wash., 1917.
The Fontanella metopica and its remnants in an adult skull. Am. J. Anat. 1918, XXIII, 259–271.
The position of the insertion of the pectoralis major and deltoid muscles on the humerus of man. Am. J. Anat., 1918, XXIII, No. 1, 155–173.
Studies in the sex-ratio in man. Biolog. Bull., 1918, XXXIV, 257–275.

One of the former (1904–5) assistants of Professor Mall is Dr. Robert Bennett Bean, now Professor of Anatomy at the University of Virginia. Dr. Bean, who from the beginning of his scientific career has been actively interested in physical anthropology, has made in the United States and in the Philippine Islands extensive somatological studies on the brain, the ear, the teeth, Philippine racial types, and on growth and proportions of the human body. It is much to his credit that he carried out his numerous studies in addition to the heavy duties of the teaching anatomist, and under other disadvantages. The bibliography of his contributions to our branch of research follows:

On a racial peculiarity in the brain of a negro. Proc. Ass. Am. Anat., in Am. J. Anat., 1905, IV, 4.
Observations on a study of the subclavian artery in man. Johns Hopkins Hospital Bull., 1904, XV, No. 159, 203–205.
A composite study of the subclavian artery in man. Am. J. Anat., 1905, IV, 303–328.
Some racial peculiarities of the negro brain. Am. J. Anat., 1906, V, 353–432, 16 fig., 12 charts; also Century Mag., 1906, LXXII, 778–784.
The training of the negro. Century Mag., 1906, LXXII, 947–953.
A racial peculiarity in the temporal lobe of the negro brain. Anat. Rec., 1907, I, 57.
A preliminary report on the measurements of about 1000 students at Ann Arbor, Mich. Anat. Rec., 1907, I, 67–68.
Lectures on Heredity. Teachers' Assembly Herald, Philippine Islands, 1908.
A theory of heredity to explain the types of the white race in North America. Philippine J. Sci., 1908, III, Sec. A, 215–233.
The Benguet Igorots: A somatologic study of the live folk of Benguet and Lepanto-Bontoc. Philippine J. Sci., 1908, III, Sec. A, 413–467.
Methods of studying the central nervous system. Philippine J. Sci., 1909, IV, Sec. B, 9–19.
A scheme to represent type heredity in man. Science, 1909, XXIX, 942–944.
A cephalograph. Philippine J. Sci., 1909, IV, Sec. A, 447–449.
Filipino types. I. Manila students. Ibid., 263–296.
Filipino types. II. Found in Malecon Morgue. Ibid., 297–337.
Filipino types. III. Racial anatomy in Taytay. A. The men. Ibid., 359–446, 16 figs., 18 plates.

Filipino types. IV. Racial anatomy in Taytay. B. The women. Ibid., 1910, v, 1–25, 7 plates. (With F. S. Planta.)
Filipino ears. I. A classification of ear types. Ibid., 1909, iv, Sec. A, 27–53, 19 figs., 10 plates.
Filipino ears. II. Ears from Malecon Morgue. Ibid., 1910, v, Sec. D, 191–195, 3 plates.
Filipino ears. III. Negrito. Ibid., 1911, vi, Sec. D., 107–125, 18 plates.
Filipino ears. IV. Ilongot and Mangyan. Ibid., 1913, viii, 357–358, 20 plates
Paleolithic man in the Philippines. Homo Philippinensis. Ibid., 1910, v, 25–31, 1 plate.
Types of Negritos in the Philippine Islands. Am. Anthrop., 1910, xii, 220–236, 15 fig.
Philippine types. Am. Anthrop., 1910, xii, 373–389, 8 plates.
The racial anatomy of the Philippine Islanders. 8vo, Phil., 1910.
The ear as a morphologic factor in racial anatomy. Verh. d. viii Intern. Zool.-Kong. zu Graz, 1910, 921–925.
The men of Cainta. Philippine J. Sci., 1911, v, Sec. D, 7–15, 1 plate.
Heredity of hair from among the Filipinos. Am. Nat., 1911, xlv, 524–563.
Some factors in the differentiation of human types. Am. Anthrop., 1912, 171–173; Science, 1912, xxv, 674.
Some useful morphologic factors in racial anatomy. Anat. Rec., April, 1912, vi, 173–179.
A composite study of the incidence of disease and physical form in New Orleans, La. Johns Hopkins Bull., Dec., 1912.
A study of physiognomy: The evolution of the human face. Am. Antiq. & Oriental J., 1912, xxxiv, 265–271; 1913, xxxv, 3–7, 231–236.
Types among the inland tribes of Luzon and Mindanao. Philippine J. Sci., 1913, viii, Sec. D, 455–462, 9 plates.
Three forms of the human nose. Anat. Rec., 1913, vii, 43–45.
The nose of the Jew and the Quadratus labii superioris muscle. Anat. Rec., 1913, vii, 47–49.
Notes on the hairy men of the Philippine Islands and elsewhere. Am. Anthrop., 1913, xv, 415–424.
The eruption and decay of the permanent teeth. Anat. Rec., 1914, viii, 299–302.
A racial peculiarity in the pole of the temporal lobe of the negro brain. Anat. Rec., 1914, viii, 479–491.
The stature and the eruption of the permanent teeth of American, German-American and Filipino children. Am. J. Anat., Nov., 1914, xvii, 113–160.
The growth of the head and face in American (white), German-American and Filipino children. Am. Anthrop., 1915, xvii, 525–528; also Anat. Rec., 1915, ix, 50–52.
Some ears and types of men. Am. Anthrop., 1915, xvii, 529–533.
Some characteristics of the external ear of American whites, American Indians, American negroes, Alaskan Esquimos, and Filipinos. Am. J. Anat., 1915, xviii, 201–225.
Notes on the alimentary canal of the hyperontomorph and the mesoontomorph. Anat. Rec., 1916, x, 181.

Diseases and death rate in human types. New Orleans Med. & Surg. J., 1916, LXIX, 175.
The weights of the organs in relation to type, race, sex, stature and age. Anat. Rec., 1917, XI, 326–328.
The permanent teeth, with special reference to American children. Proc. XIXth Intern. Cong. Amer., Wash., 1917, 611–615.

Still another former associate of Professor Mall whose work has been of importance to Physical Anthropology, is Dr. C. H. Bardeen, since 1904 Professor of Anatomy at the University of Wisconsin. His publications, dealing with the development of the skeleton, will be referred to in the final section of this work.

PHYSICAL ANTHROPOLOGY: ITS SCOPE AND AIMS; ITS HISTORY AND PRESENT STATUS IN AMERICA

ALEŠ HRDLIČKA

C—*concl.* Recent History and Present Status of the Science in North America

Washington, D. C.

Washington, due to the location here of the Smithsonian Institution together with the National and Army Medical Museums, and of such government concerns as the Bureau of American Ethnology, the Indian Office, the Census Bureau and the Bureau of Immigration, has long offered a most favorable field for Physical Anthropology, and this field, though perhaps not always made a full use of, was not neglected in recent years.

THE ARMY MEDICAL MUSEUM

Since the transfer in 1898–1899 and 1904 of approximately 4,000 normal crania and other osteological specimens from the Army Medical Museum to the National Museum (see Part *B*), activities in Physical Anthropology in the former have ceased. The Surgeon-General's Library at the Museum, however, and the *Index Medicus* which is edited there, continue to be of great aid to students in Physical Anthropology; and helpful interest in the branch has been preserved by Dr. Lamb, pathologist of the Museum and Professor of Anatomy at the Howard University.

Born in 1843 in Philadelphia, Doctor Lamb served in various capacities through the Civil War, then graduated in medicine, and in 1868 was assigned, as Acting Assisting Surgeon, U. S. A., to duty at the Army Medical Museum, where he is to this date. He has been one of the pillars of the Anthropological Society of Washington, and has given us a number of contributions of value to Physical Anthropology. He conducted the post mortem examinations of President Garfield, Vice-President Henry Wilson, and the assassin Guiteau; has been for

many years in charge of the splendid exhibits in the Army Medical Museum; and was largely instrumental in the eventual transfer of the normal anthropological material to the United States National Museum.

His anthropological bibliography follows:

Eighth sternal rib in man. Amer. Anthrop., 1889, II, 75.
The olecranon perforation. Amer. Anthrop., 1890, III, 159–174.
Primitive trephining in Peru. Nat. Med. Rev., 1895–6, IV, 28.
Precolumbian syphilis. Proc. Assn. Amer. Anat., 1897, X, 63; also Nat. Med. Rev., 1897–8, VII, 234.
Mythical monsters. Amer. Anthrop., 1900, II, 277–291.
Mummification, especially of the brain. Amer. Anthrop., 1901, III, 294–307.
Some brain weights in the negro race. Amer. Anthrop., 1904, VI, 364.
The story of the Anthropological Society of Washington. Amer. Anthrop., 1906, VIII, 564–579.
Specimens in the Army Medical Museum from prehistoric peoples. Wash. Med. Annals, 1912–13, 109–118.
Obituary of Dr. Robert Fletcher. Amer. Anthrop., 1912, XIV, 687.
Case of supernumerary toe in Egyptian mummy. Wash. Med. Annals, 1914, XIII, 161.
Sanitation in ancient civilizations. Ibid., 335–352.
The Army Medical Museum in American Anthropology. Proc. XIX Internat. Cong. Americanists, Wash., 1917, 625–632.

In connection with the Army Medical Museum a word is due also to Dr. J. L. Wortman, who in 1888, while attached as Anatomist to the Museum, was largely instrumental in preserving the human bones recovered by the Hemenway Expedition to the Southwest, and who subsequently published a painstaking study on the hyoid bones found among this material (*Amer. Anthrop.*, 1889, II, 81; *C. R. VII Cong. Internat. d'Américanistes*, Berlin, 1888; *Mem. Nat. Acad. Sc.*, 1893, VI, 203–211). Doctor Wortman is still living, but devotes his attention to paleontology and osteology of other mammals than man. One of the main problems he is occupied with is, however, the origin of the primates.

In his studies on the Indian hyoid, Doctor Wortman was assisted by the Anthropologist of the Hemenway Expedition, Dr. Herman ten Kate, whose work in American Anthropology may perhaps best be noted in this connection.

Doctor ten Kate, a native of Holland, scholar of Broca, and now for many years living in Japan, has given us a series of valuable contributions on American anthropology, both that of the living and of the

skeletal remains. He first visited this continent in 1883, under the auspices of the Société d'Anthropologie de Paris, when he studied the Iroquois, the Indians of Lower California and some of those of the Southwest. He visited the Southwest again as the Anthropologist of the Hemenway Expedition, in 1887–1888, secured observations and measurements on several hundred of adults and children among the Pima, Papago, Maricopa, Yuma, Zuni and other Indians, and contributed to the important skeletal collections gathered under the auspices of the expedition. After that his interest extended to the Indians of South America, where he traveled considerably and settled for a time. To some extent he is still engaged with American problems, his latest contribution to the subject dating from as late as October 1917. He is perhaps the last anthropologist of note who defends the theory of a multiplicity of races on the American continent, though this is largely if not entirely due to his interpretation of the term "race." The following is a list of his contributions to North American Physical Anthropology:

Quelques observations sur les Indiens Iroquois. Rev. d'Anthrop., 1883, 2 sér., VI, 279–283.

Les Indiens de la présque-île de la Californie et de l'Arizona. Lettre, Bull. Soc. d'Anthrop., Paris, 1883, 3 sér., VI, 374–376.

Indiens de la Sonora et de l'Arizona. Lettre, Ibid., 634–637.

Observations sur les Indiens du Nouveau Mexique et du Colorado. Lettre, Ibid., 801–804.

Indiens des Etats-Unis du Sud-Ouest. Lettre, Ibid., 898–900.

Sur quelques crânes de l'Arizona et du Nouveau Mexique. Ibid., 1884, VII.

Matériaux pour servir à l'anthropologie de la presque-île Californienne. Bull. Soc. d'Anthrop., Paris, 1884, 3 sér., VII, 551–569.

Description d'un crâne Moqui. Arch. Neerland., 1885, XX.

Reisen en onderzoekingen in Noord-Amerika. 8°, Leiden, 1885, 464 pp. (Includes measurements and observations on Indians of the southwest.)

On an anatomical characteristic of the hyoid bone of Precolumbian Pueblo Indians. C. R. VII Cong. Internat. d'Américanistes, Berlin, 1888 (with J. L. Wortman).

On the alleged Mongolian characteristics of the American race. A reply to Dr. Brinton. Science, 1888, 227–228.

Sur la question de la pluralité et de la parenté des races in Amérique. C. R. VIII Cong. Internat. d'Américanistes, Paris, 1892, 288–294.

Somatological observations on Indians of the Southwest. J. Am. Ethnol. & Arch., 1892, III, 119–144.

Observations au sujet des "Recherches anthropologiques sur la Basse-Californie" du Dr. Rivet. L'Anthrop., 1911, XXII, 37–40; Encore l'anthropologie de la Basse-Californie. Ibid., 374–375.

Dynamometric observations among various peoples. Am. Anthrop., 1916, XVIII, 10–18.
Mélanges anthropologiques: Indiens d'Amérique du Nord. L'Anthrop., 1917, XXVIII, 369-401.

UNITED STATES NATIONAL MUSEUM, SMITHSONIAN INSTITUTION

The establishment of the Division of Physical Anthropology in the United States National Museum, 1903, has been briefly touched upon in Part *B* of this memoir. Since then and in close coöperation with the Bureau of American Ethnology, the National Museum has become the center of activities in this line in Washington. The credit for the establishment of the Division and in a large measure also for its progress, is due to Prof. William H. Holmes, formerly Chief of the Bureau of American Ethnology, and since 1910 Head Curator of the Department of Anthropology at the United States National Museum.

The Division, from the modest beginnings which consisted of a stack of trays and boxes of old skeletal material, some of which had never yet been unpacked, together with a few open shelves in a portion of a gallery in the old museum and one chair with one small plain table, grew until at present it embraces an office, library, exhibition room and hall, brain room, preparatory rooms, laboratory, storage and maceration room; and its activities have grown in proportion. In view of the fact that valuable anthropological material is generally and rapidly becoming scarce, the foremost care was given from the start to the gathering of such material both in America and other parts of the world, and to its preservation in the best possible form for future reference and investigation. The old collections were carefully combed over and all material that was not properly identified, of which there was a large amount, was eliminated. New forms of drawers and racks and new system of arrangement were developed, assuring the utmost practicable safety, ventilation, freedom of dust and accessibility. A fully equipped anthropometric laboratory was established for the purpose of research and instruction. The collections were extended to other important parts of the body besides the skeleton, more particularly to the brain, and the most valuable specimens in the collection were segregated as exhibits, and as special series for scientific visitors. The Division has been made freely accessible to all properly equipped students, and is being used for purposes of investigation by a steadily increasing number of dentists, physicians, and other scientific men. In addition the Division is freely assisting, by instruction and other-

wise, in anthropological investigations carried on in other parts of the country; while no small part of its function is that of furnishing anthropological information to correspondents of the Institution. There are no undergraduate courses of instruction; but laboratory facilities and other assistance are offered to postgraduates desirous to engage in anthropological investigations.

In research, the foremost attention has been and is being given to the problems of man's antiquity, particularly that on the American continent; to the racial identity, origin and derivation of the American Indian; to the anthropological problems presented by the heterogeneous population of the United States; and recently to the influences on the race of the war.

Under the auspices of the Smithsonian Institution, of various government departments, and of expositions, such as that held 1915–1916 at San Diego, Cal., numerous expeditions for the collection of anthropological data and specimens have been made to different parts of the world; an account of these is yearly given in the *Smithsonian Explorations.*

The publishing of the *American Journal of Physical Anthropology*, while not its official function, is nevertheless an outgrowth of the work of the Division.

It will perhaps be most convenient to give in this place the bibliography of the anthropological publications of the writer, curator of the Division.

Anthropological and medical-anthropological publications, by Aleš Hrdlička:

Contribution to the general pathology of the insane. (Physical examinations and measurements.) 24th Ann. Rep. Middletown St. Hom. Hospital, Middl., N. Y., 1895, 162–207.

A case of extensive traumatic brain lesion with very meagre objective symptoms. Med. Record, 1895, XLVIII, 512–514, 2 fig.

Disorders of sensibility in the insane. N.-Am. J. Homeop., 1895, X, 719–729.

Contributions to general etiology and pathology of the insane: I. Etiological relation of tuberculosis to insanity; II. Disorders of smell in the insane; III. Reflexes in the insane; IV. Investigations as to color-blindness and some psychological phenomena in the insane. Twenty-fifth Ann. Rep. Middletown St. Hom. Hospital, Middl., N. Y., 1896, 149–177. Also in Am. J. Insan., 1896, LII, 325–343.

Twenty autopsies held upon the cadavers of the insane. Twenty-fifth Ann. Rep. Middletown St. Hom. Hospital, Middl., N. Y., 1896, 179–213.

A trial of thyroid in a few cases of insanity. State Hospitals Bulletin, 1896. Utica, N. Y., I, 55–63.

Pathological Institute of the New York State Hospitals: Department of Anthropology—Outline of its scope and exposition of the preliminary work. State Hospitals Bull., 1897, II, 1–18. Also in Contributions of the Pathological Institute of the New York State Hospitals, Utica, N. Y., 1898, no. 4.

A few words about anthropometry. Am. J. Insan., 1897, LIII, 521–533.

An interesting case of pseudo-hermaphroditismus masculinus completus. Albany Med. Annals, 1897, XVIII, 476–484. With 4 fig. (In title J. C. Carson & A. H., but whole paper by A. H.)

The teeth in the neuropathic. Trans. Hom. Med. Soc. St. N. Y., 1897, XXXII, 170–173.

The medico-legal aspect of the case of Maria Barbella (with anthropometric data on Calabrian women). State Hospitals Bull., 1897, II, 213–299, fig. 1–19.

Trephining in Mexico. Am. Anthrop. 1897, X, 389–396, 2 pl., 1 fig. (With C. Lumholtz, but all except first three paragraphs by A. H.)

Art and "Literature" in the mentally abnormal. Trans. Hom. Med. Soc. St. N. Y., 1898, XXXIII, 233–246. Also in Am. J. Insan., 1899, LV, 385–404, pl. 1–6.

Report on anthropological work in the State Institution for feeble-minded children, Syracuse, N. Y. Forty-eighth Ann. Rep. of the Institution. Published also separately by Wynkoop, Hallenbeck, Crawford Co., N. Y., and Albany, 8°, 1899, 98 pp., 2 charts, 2 fig.

Physical differences between white and colored children. Am. Anthrop., 1898, XI, 347–350.

Dimensions of the pituitary fossa or Sella Turcica in the white and the negro races. Arch. Neurol. & Psychopath., Utica., N. Y., 1898, I, 679–698, 3 pl.

Study of the normal tibia. Am. Anthrop., 1898, XI, 307–312. Also Proc. Ass. Am. Anat., 11th Sess., Wash., 1899, 61–66, 1 fig. (Paper not quite the same.)

Report on skeletal remains of the Seri. In W J McGee's "The Seri Indians," 17th Ann. Rep., B. A. E., Wash., 1898, 140–147, fig. 6.

An anomalous ulna: supracapital foramen. Am. Anthrop., 1899, n.s., I, 248–250, 1 pl.

A new joint formation [Radio-humeral]. Ibid., 550–551, 1 pl.

Description of an ancient anomalous skeleton from the Valley of Mexico; with special reference to supernumerary and bicipital ribs in man. Bull. Am. Mus. Nat. Hist., N. Y., 1899, XII, Art. V, 81–107, pl. I-V, fig. 1–10. Transl. in Anales del Museo Nacional, Mex., VII, 75–92.

Esquimo brain. Proc. Am. Med.-Psychol. Ass., N. Y., 1899, 392–397, pl. I–V, fig. 1–2.

The needs of American anthropologists. Am. Naturalist, 1899, XXXIII, 684–688.

A further contribution to the study of the tibia, relative to its shapes. Proc. Assn. Am. Anat., XII and XIII Sessions, Wash., 1900, 12–13.

Anthropological investigations on one thousand white and colored children of both sexes, the inmates of the New York Juvenile Asylum. With additional notes on one hundred colored children of the New York Colored Orphan Asylum. Wynkoop, Hallenbeck, Crawford Co., N. Y., and Albany, 1900, 8°, 1–86, 4 charts, 12 fig.

Arrangement and preservation of large collections of human bones for purposes of investigation. Am Naturalist, 1900, XXXIV, 9–15.

Physical and physiological observations on the Navaho. Am. Anthrop., 1900, II, 339–345.

A bilateral division of the parietal bone in a Chimpanzee; with a special reference to the oblique sutures in the parietal. Bull. Am. Mus. Nat. Hist., N. Y., 1900, XIII, 281–295, fig. 1–6.

Contribution to the osteology of ribs. Proc. Assn. Am. Anatom., 14th Ann. Sess., Wash., 1901, 61–68, fig. 1–6.

Typical forms of shaft of long bones. Proc. Assn. Am. Anatom., 14th Ann. Sess., Wash., 1901, 55–60, fig. 1–2.

Certain racial characteristics of the base of the skull. Science, 1901, XIII, 309. Also Proc. Assn. Am. Anatom., 15th Sess., in Am. J. Anat., 1901–2, I, 508–9.

An Eskimo brain. Am. Anthrop., 1901, III, 454–500, pl. I–IV, 2 fig. Also separately: The Knickerbocker Press, N. Y., 1901, 8°, 1–49, pl. I–IV, 2 fig.

A painted skeleton from Northern Mexico, with notes on bone painting among the American aborigines. Am. Anthrop., 1901, III, 701–725, pl. XXV.

The crania of Trenton, New Jersey, and their bearing upon the antiquity of man in that region. Bull. Am. Mus. Nat. Hist., N. Y., 1902, XVI, Art. 3, 23–62, 3 charts, pl. I–XXII, fig. 1–4.

Particularidades anatomicas de los craneos Otomies. Cronica Medica Mexicana, 1902, V, 72–75.

New instances of complete division of the malar bone, with notes on incomplete division. Am. Naturalist, 1902, XXXVI, 273–294, fig. 1–15.

Anthropological work in the Southwestern United States and Mexico. Am. Mus. J., N. Y., 1902, II, No. 7, 68–72, 1 fig.

The Aztecs of yesterday and today. Harpers Monthly, N. Y., Dec., 1902, 35–42, map and 3 fig.

The Lansing skeleton. Am. Anthrop., 1903, V, 323–330, 1 fig.

A modification in measuring cranial capacity. Science, 1903, XVII, 1011–1014, 1 fig.

Divisions of the parietal bone in man and other mammals. Bull. Am. Mus. Nat. Hist., N. Y., 1903, XIX, Art. VIII, 231–386, 15 pl., 35 fig.

The "Chichimecs" and their ancient culture, with notes on the Tepecanos and the ruin of La Quemada, Mexico. Am. Anthrop., 1903, V, 385–440, 8 pl., 4 fig.

Notes on the Indians of Sonora, Mexico. Am. Anthrop., 1904, VI, 51–89, 7 pl.

Anomalous articulation and fusion of the atlas with the occipital bone. Abstr., Wash. Med. Ann., 1904, III, 34–35.

Further instances of parietal division. Am. Naturalist, 1904, XXXVII, 301–309, fig. 1–4.

Further instances of malar division. Ibid., 361–366, fig. 1–5.

Directions for collecting information and specimens for physical anthropology. Bull. U. S. Nat. Mus., Part R, No. 39, Wash., 1904, 1–25, pl. I–VIII.

Crow burial in Montana. Proc. Anthrop. Soc. Wash., Am. Anthrop., 1904, VI, 753.

Two artificially deformed crania. Trans. Anthrop. Soc. Wash., in Am. Anthrop., 1904, VI, 756–758.

Brain weight in vertebrates. Smiths. Misc. Coll., Wash., 1905, XLVIII, Part 1, No. 1582, 89–112.

Head deformation among the Klamath. Am. Anthrop., 1905, VII, 360–361.
The painting of human bones among the American aborigines. Rep. Smiths. Inst. for 1904, Wash., 1905, 607–617, pl. I–III.
Notes on the San Carlos Apache. Am. Anthrop., 1905, VII, 480–495, 3 pl., 7 fig.
Diseases of the Indians, more especially of the Southwest United States and Northern Mexico. Wash. Med. Ann., 1905, IV, 372–394.
Notes on the Pima of Arizona. Am. Anthrop., 1906, VIII, 39–46, 2 pl., 8 fig.
Brains and brain preservatives. Proc. U. S. Nat. Mus., 1906, XXX, 245–320b, fig. 1–27.
Contribution to the physical anthropology of California. Univ. of Cal. Publications American Archeology and Ethnology, 1906, IV, No. 2, 49–64, 5 tables, map, pl. 1–10.
Anatomical observations on a collection of orang skulls from Western Borneo; with a bibliography. Proc. U. S. Nat. Mus., 1906, XXXI 539–568, fig. 1–8.
Measurements of the cranial fossae. Proc. U. S. Nat. Mus., 1907, XXXII, 177–232, 2 pl.
Beauty among the American Indians. Boas Anniversary Volume, N. Y., 1906, 38–42, 3 pl.
Handbook of American Indians North of Mexico. Bull. XXX, B. A. E., Wash., 1907–1910 (and subsequent editions). Articles: Part I—Anatomy, 53–56; Artificial head deformation, 96–97; Health and disease (in Indians), 540–541; and medicine and medicine-men, 836–839. Part II—Physiology, 238–240; Scarification, 484–485.
Physical anthropology and its aims. Science, 1908, XXVIII, No. 706, 33–43. Also Anat. Rec., 1908, II, 182–195. Revised ed. in Am. J. Phys. Anthrop., 1918, I, 1–23.
Skeletal remains suggesting or attributed to Early Man in North America. Bull. 33, B. A. E., Wash., 1907, 1–113, pl. I–XXI, fig. 1–16.
Report on a collection of crania from Arkansas. J. Ac. Nat. Sc., Phila., 1908, XIII, 558–563.
Contribution to the knowledge of tuberculosis in the Indian. The Southern Workman, 1908, XXXVII, 626–634. Also, in Trans. VII Internat. Cong. on Tuberculosis. Abstr. in Charities and the Commons, N. Y., 1908, XXI.
New examples of American Indian skulls with low forehead. Proc. U. S. Nat. Mus., 1908, XXXV, 171–175, 1 pl.
Otis Tufton Mason. Science, 1908, XXVIII, 746–748.
Physiological and medical observations among the Indians of Southwestern United States and Northern Mexico. Bull. 34, B. A. E., Wash., 1908, I–IX, 1–460, pl. I–XXVIII, fig. 1–2.
Tuberculosis among certain Indian tribes of the United States. Bull. 42, B. A. E., Wash., 1909, I–VII, 1–48, pl. I–XXII.
Report on the skeletal remains (from Eastern Nebraska). Am. Anthrop., 1909, XI, 79–84, fig. 8. (With "Excavation of Earth-Lodge ruins in Eastern Nebraska," by Robert F. Gilder).
Note sur la variation morphologique des Egyptiens depuis les temps préhistoriques ou prédynastic. Bull. et Mém. Soc. d'Anthrop., Paris, 1909, X, 143–144.
The stature of the Indians of the Southwest and of Northern Mexico. Putnam Anniversary Volume, Cedar Rapids, Ia., 1909, 405–426.

Report on skeletal material from Missouri mounds, collected in 1906–1907 by Mr. Gerard Fowke. In Bull. 37, B. A. E., Wash., 1910, 103–112.

Report on an additional collection of skeletal remains from Arkansas and Louisiana. J. Ac. Sc., Phila., 1909, XIV, 173–240, 9 fig.

Contribution to the anthropology of Central and Smith Sound Eskimo. Anthrop. Papers, Am. Mus. Nat. Hist., N. Y. 1910, V, part II, 175–280, 15 pl.

Report on the Trenton femur and parietal. In "The archeology of the Delaware Valley," by E. Volk, Papers of the Peabody Mus., Cambridge, Mass., 1911, 244–247.

Some results of recent anthropological exploration in Peru. Smiths. Misc. Coll., 1911, LVI, No. 16, 1–16, 4 pl.

Human dentition and teeth from the evolutionary and racial standpoint. Dominion Dent. J., Toronto, 1911, 403–422.

The natives of Kharga Oasis, Egypt. Smiths. Misc. Coll., 1912, LIX, No. 1, I–VI, 1–118, pl. I–XXXVIII.

The problem of unity or plurality and the probable place of origin of the American aborigines. Symposium, presented before Sect. H., A. A. A. S., 1911. Parts History and Physical Anthropology. Am. Anthrop., 1912, XIV, 5–12. Also Trans. XVIII Internat. Cong. Americanists, London, 1913, 57–62.

Early Man in South America. With the collaboration of W. H. Holmes, Bailey Willis, F. E. Wright and C. N. Fenner. Bull. 52, B. A. E., Wash., 1912, I–XV, 1–405, pl. I–LXVIII, fig. 1–50.

An ancient sepulchre at San Juan Teotihuacan, with anthropological notes on the Teotihuacan people. Reseña II Ses. XVII Congr. Internac. Americanistas. Mex., 1912, Append., 1–7.

Early Man in America. Am. J. Sc., 1912, 543–554; also Trans. XVIII Internat. Cong. Americanists, London, 1913, 10–21.

Early Man and his "Precursors" in South America. Anat. Anzeiger, 1913, XLIII, 1–14.

Remains in Eastern Asia of the race that peopled America. Smiths. Misc. Coll., Wash., 1912, LX, No. 16, 1–5, 3 pl.; also C. R. XIV Congr. Internat. d'Anthropol. et d'Archeol. préhist., Genève, 1913, 409–414. Also J. Hered., Wash., 1915, VI, 79–91, Transl. in Russian in Trudy Troickosavsko-Kiachtinskago Otd. Imp. Russ. Geog. Obšč., 1912, XV, 70–75.

Report on skeletal remains from a mound on Haley Place, near Red river, Miller Co., Ark. J. Ac. Nat. Sc., Phila., 1912, XIV, 639–640.

Artificial deformations of the human skull. With especial reference to America. Abstr. in Actas XVII Cong. Internac. Americanistas, Buenos Aires, 1913, 147–149.

A report on a collection of crania and bones from Sorrel Bayou, Iberville Parish, Louisiana. J. Ac. Nat. Sc., Phila., 1913, XVI, 95–99.

Anthropological work in Peru in 1913. With notes on the pathology of the ancient Peruvians. Smiths. Misc. Coll., Wash., 1914, LXI, No. 18, I–VI, 1–69, 26 pl., 3 fig.

Report on two crania from Saline Creek. In Bushnell, D. I., Jr., Archeol. Investigations in Ste. Genevieve Co., Mo., Proc. U. S. Nat. Mus., Wash., 1914, XLVI, 656.

The most ancient skeletal remains of man. Smiths. Rep. for 1913, (Wash. 1914), 491–552, pl. 1–41. Second rev. edit., Smiths. publ. 2300, 8°, Wash., 1916, 1–63, 40 pl., 12 fig.

Physical anthropology in America: History. Am. Anthrop., 1914, XVI, 508–554; revised and supplem. ed. in Am. J. Phys. Anthrop., 1918, I, 133–182.

Descriptive catalog of the section of physical anthropology, Panama-California Exposition. 12mo., San Diego, Cal., Dec., 1914, 14 pp.

Some recent anthropological explorations. Proc. Nat. Ac. Sc., 1915, I, 235–238.

An exhibit in physical anthropology. Proc. Nat. Ac. Sc., 1915, I, 407–410.

Study of Old Americans. J. Hered., 1914, V, 509. Also, The Old American stock. Magaz. Daughters American Revolution, Sept., 1915, 168–171.

Evolution of man in the light of recent discoveries and in relation to medicine. Abstr., Wash. Med. Annals, 1915, XIV, 4 pp.

Brief notes on recent anthropological explorations under the auspices of the Smithsonian Institution and the U. S. National Museum. Proc. Nat. Ac. Sc., 1916, II, 32–37.

Physical anthropology of the Lenape or Delawares and of the Eastern Indians in general. Bull. 62, B. A. E., Wash., 1916, 1–130, map, 29 pl. Also in Contributions Mus. Am. Indian, N. Y., 1916, III.

The normal dental arch. Dental Cosmos, 1916, LVIII, 1029–1032, 1059–1064.

Goiter among the Indians along the Missouri. Science, 1916, XLIV, 203–204.

The brain collection of the U. S. National Museum. Science, 1916, XLIV, 739.

Anthropology of the Chippewa. Holmes Anniversary Volume, Wash., 1916, 198–227, 13 pl.

The Indian Service. Rep. 34, Mohonk Conf., N. Y., 1916, 26–33.

Conditions among Indians which call for amelioration. Rep. 34, Mohonk Conf., N. Y., 1916, 65–69.

The genesis of the American Indian. Trans. XIX Internat. Cong. Americanists, Wash., 1917, 559–568.

The old white Americans. Trans. XIX Internat. Cong. Americanists, Wash., 1917, 582–601. Abstr. with new illust. in J. Hered., 1917, VIII, 99–105.

Secretary's Report of the Congress. Trans. XIX Internat. Cong. Americanists, Wash., 1917, I–LVIII.

Preliminary report on finds of supposedly ancient human remains at Vero, Florida. J. Geol., 1917, XXV, 43–51.

Bohemia and the Czechs. Nat. Geogr. Mag., Feb. 1917, XXXI, 163–187, 25 illust.

Suggestions relating to the New National Army by the Anthropology Committee of the National Research Council. Proc. Nat. Ac. Sc., 1917, III, 526–528.

The vanishing Indian. Science, 1917, XLVI, 266–267.

Transpacific migrations. Man, 1917, XVII, 29–30.

Recent discoveries attributed to Early Man in America. Bull. 66, B. A. E., Wash., 1918, 1–67, 14 pl., 8 fig.

Physical anthropology: Recent history and present state in North America (with bibliographies). Am. J. Phys. Anthrop., 1918, I, Nos. 3 and 4.

Anthropological studies on Old American families. Exploration and fieldwork of the Smiths. Inst. in 1917. Smiths. Misc. Coll., 1918, LXVIII, 49–55, 6 illust. The vanishing Indian. Ibid., 55–60, 7 illust.

Prof. Wm. H. Holmes, though essentially archeologist, has nevertheless always been keenly interested in Physical Anthropology and has published, both in and outside of his connection with the United States National Museum, a number of papers which have more or less direct relation to our branch of research and thought. They bear especially on the question of man's antiquity on this continent. They are:

Are there traces of glacial man in the Trenton gravels? J. Geol., Chic., 1893, I, 15–37.

Traces of glacial man in Ohio. Ibid., 147–163.

Vestiges of early man in Minnesota. Am. Geol., Minneapolis, 1893, XI, 219–240.

Vestiges of early man in Minnesota. The Archeol., Waterloo, Ind., 1894, II, 65–79.

Preservation and decorative features of Papuan crania. Publ. Field Columbian Mus., Anthrop. series, Chicago, 1897, II, 41–48.

Primitive man in the Delaware valley. Proc. 46th Meet. A. A. A. S. (Detroit, 1897), Salem, 1898, 364–370.

Preliminary revision of the evidence relating to auriferous gravel man in California. Am. Anthrop., 1899, n. s., I, 107–121, 614–645.

Review of the evidence relating to auriferous gravel man in California. Ann. Rep. Smiths. Inst. for 1899, Wash., 1901, 419–472.

Sketch of the origin, development, and probable destiny of the races of men. Am. Anthrop., 1902, IV, 369–391.

Fossil human remains found near Lansing, Kansas. Am. Anthrop., 1902, IV, 743–752.

Fossil human remains found near Lansing, Kansas. Ann. Rep. Smiths. Inst. for 1902, Wash , 1903, 455–462.

Organization of the Committee on Anthropology of the National Research Council, and its activities for year 1917. Am. J. Phys. Anthrop., Wash., 1918, I, 77–90.

On the antiquity of man in America. Science, 1918, XLVII, 561–562.

THE BUREAU OF AMERICAN ETHNOLOGY

The Bureau of Ethnology continues to render valuable assistance to Physical Anthropology on all occasions. It has not only facilitated the publication of several memoirs in this branch, but has also assisted materially in securing additional collections of skeletal material and in furthering somatological work wherever feasible. In Professor Holmes, Mr. F. W. Hodge, and Dr. Walter J. Fewkes, its past and present chiefs, Physical Anthropology has had and continues to have the best friends and promoters. The Bureau's publications in somatology are given in other connections.

NATIONAL ZOÖLOGICAL PARK

Within the last fifteen years the National Zoological Park, first under the direction of Dr. Frank Baker and now of Mr. N. Hollister, has rendered considerable assistance to anthropology at the Smithsonian Institution by facilitating a prompt transmission of dead animals, with necessary data, for the purpose of brain extraction.

OTHER GOVERNMENT INSTITUTIONS IN WASHINGTON

Public Health Service. Bureau of Immigration. The Immigration Commission.—Under the coöperation of the Public Health Service, which furnishes the medical staffs to the Immigration Service, anthropometric investigations have recently been carried on through several seasons on the various nationalities of immigrants reaching this country. These investigations, under the direction of the writer, are not yet completed. Special credit for the facilitation of this most desirable work is due to Dr. Rupert Blue, Surgeon General of the Public Health Service.

The Immigration Commission was a special body appointed in 1907 by the United States Congress for study of the various problems connected with immigration. Under the auspices of this Commission a very creditable *Dictionary of European and other Immigrant Races or Peoples* was compiled and published some years ago (Senate Doc. No. 662, 8°, Wash., 1910). It was the work of *Dr. Daniel Folkmar* (assisted by Dr. Eleanora Folkmar), who until recently was connected with the Bureau of Census. Doctor Folkmar was formerly active in anthropology at Manila, P. I., and in connection with his work there published an *Album on Philippine Tribes*, 4°, Manila, 1904, with 80 plates and individual measurements. The Immigration Commission published also a number of other volumes, several of which through the demographic data which they contain are of some interest to Physical Anthropology.

The United States Bureau of Census, while not concerned directly with anthropological investigations, is furnishing our science with invaluable documents on the population. The racial data and comparisons which it has published in such useful form within the last years are especially helpful (See "Circular of Information Concerning Census Publication," Bur. of Census, 8°, Wash., 1914, 91 pp.).

THE UNITED STATES BUREAU OF INDIAN AFFAIRS

The Bureau of Indian Affairs, while not engaging directly in anthropological work, has always been most favorable and helpful to explorers and workers in all branches of anthropology. Moreover its Annual Reports are a mine of statistical and other information on the Indians; and under its auspices or directly by the Bureau there have been conducted, beginning in 1907 with the writer's study on tuberculosis, investigations on diseases among the Indians, the results of which and the practical applications of these results are of decided concern to physical anthropology.

THE CHILDREN'S BUREAU

The Children's Bureau was established under the Department of Labor, in Washington, in 1912, and has since been ably directed by Miss Julia C. Lathrop. It employs a number of lady physicians and other investigators who devote most of their time to field work. The chief aim of the Bureau is to "investigate and report upon all matters pertaining to the welfare of children," but the researches which it carries on and which are rapidly increasing, are of very close interest to Physical Anthropology. It is hoped, moreover, that these studies may soon extend to such subjects as the growth and the general development of the American child under radically different conditions of derivation, environment, occupation and social position. The Bureau has already issued a series of very creditable publications dealing with maternal and infant mortality, statistics of children, and related subjects.

THE NATIONAL RESEARCH COUNCIL

The National Research Council was organized in Washington during 1916–1917, under Government auspices, and in close coöperation with the National Academy of Sciences, the American Association for the Advancement of Science and other important societies. The object of the council is to advise and assist the Government in all matters where science can be of help under the present critical conditions; and its original plan included the selection of a representative committee from each branch of science that could be useful in connection with the war. It is gratifying to state that one of the first committees brought into existence was that on Anthropology. The aspirations and activities of this Committee have been described in the first number of this

Journal[1] and need not be repeated. It will suffice to say that at the end of the first year of its existence the condition of this Committee and its prospects of accomplishing good work were quite propitious. There were many material difficulties in the way, but possibly they would have been surmounted.

Due to unfortunate circumstances, the year 1918 has been most unfavorable for the Committee, with the result that this has finally passed out of existence. This is, however, not the time or place to enter into details about these conditions; but some day the history of the Committee will make instructive though perhaps not very cheerful reading.

At present (1919), the prospects of Anthropology under the National Research Council are again improving, and there is substantial hope that before the end of the year an effective section of Anthropology (general) shall have been organized under the auspices of the Council.

ADDITIONAL

In connection with various other government departments there arose in Washington within the last few decades a number of men who, though not regular workers in Physical Anthropology, have through their writings and otherwise contributed to the progress of the branch. Among those of this class who are still with us, the first mention is due to Doctor Yarrow.

Dr. H. C. Yarrow assisted Severance in his study of human crania and skeletons from the southwest (Vol. VII, U. S. Geog. Surv. W. 100th Merid., Wash., 1879, 391), and gave us a number of papers of interest to somatology, the most valuable of which is that on burial customs of the North American Indians. They are:

List of skeletons and crania. Army Med. Mus., Wash., 8°, 1876, 52 pp.
On the explorations of some Indian graves in Utah. Field and Forrest, 1877, II, 185–188.
Notes on Indian graves in Utah. Ibid., 1877, II, 207.
Exploration of ancient aboriginal graves in New Mexico. Ibid., 1877, II, 8–10.
A further contribution to the study of the mortuary customs of the North American Indians. First Ann. Rep. B. A. E., Wash., 1881, 89–203.

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[1] See "Organization of the Committee on Anthropology of the National Research Council, and its Activities for year 1917" by William H. Holmes, *Am. J. Phys. Anthrop.*, 1918, I, 77–90.

Still another anthropological investigator of Washington was *Dr. Arthur MacDonald.* Connected (1891–1903) with the United States Bureau of Education as "Specialist in Education as Preventive of Pauperism and Crime," he devoted his attention in a measure to the study of children, but his main lines of interest were always criminology and the abnormal classes of the population. He published numerous contributions to these subjects, the more noteworthy of which are:

Experimental study of children. Wash., Govt. Print. Office, 8°, 1899, 406 pp.
Statistics of crime, suicide and insanity. A Senate document, Wash., Govt. Printing Office, 8°, 1903, 195 pp.
Juvenile crime and reformation. Wash., Govt. Printing Office, 8°, 1908, 339 pp.

Doctor MacDonald's work unfortunately has remained in a large measure individualistic and has failed to bring the desired results. Since 1911 he is again connected with the Bureau of Education, but not in scientific capacity. The anthropometric laboratory which he was instrumental in establishing at the Bureau has been abandoned.

Under the auspices of the United States Bureau of Education were also published two memoirs on anthropometric studies of children by outside investigators—the first, by Dr. F. Boas, on "The Growth of Toronto Children" (*Ann. Rep. Comm. Educ.* for 1896–1897, Wash. 1898, 1541–1599) and the second, by F. Boas and Clark Wissler, on "Statistics of Growth" (*Ibid.*, for 1904, Wash. 1905, 25–132).

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

This section would be incomplete without an additional mention of the services to somatology and American anthropology in general, of the Anthropological Society of Washington. Established in 1879, this Society has been active to this day without interruption. The object of the Society, as stated in the original constitution, was "to encourage the study of the natural history of man, especially with reference to America," and its sections included in the first place Somatology (for details see "The Story of the Anthropological Society of Washington," by D. C. Lamb, *Am. Anthrop.*, 1906, n. s. VIII, 564–579). It was under the auspices of this Society that the *American Anthropologist* was established, and under its auspices, also, were given the series of "Saturday lectures" on Anthropology at the United States National Museum. Since 1916 the program of the Society at its bi-weekly meetings has been devoted essentially to war anthropology.

Between 1885 and 1899 there existed in Washington also a Women's Anthropological Society, one of whose members, Dr. Clara Bliss Hinds, left us an interesting contribution on "Child Growth," which in 1886 was published by the Society (8°, 8 pp.).

Central and Western States

In the central and western states, where the development of indigenous research is of more recent date, physical anthropology, as quite natural, has not thus far found as favorable a culture-medium as in the east. But there are several foci where the prospects are promising for the future.

THE WESTERN RESERVE UNIVERSITY, CLEVELAND, OHIO

The Anatomical Laboratory at the Medical School of the University has since 1912 been in charge of Prof. T. Wingate Todd, who as far as his other strenuous duties permit, has been actively interested in anthropology. He includes regularly a course of instruction in Physical Anthropology with his anatomical lectures, has made creditable collections in this line and published the following anthropological papers:

The dentition of the apes, etc. Cleveland Med. J., 1914, XIII, 157–167.
Early types of man. Ibid., 307–315.
Neanderthal man. Ibid., 375–384.
The ancestry of Homo Sapiens. Ibid., 460–469.
Paleolithic giants and dwarfs. Ibid., 533–539.
The story of the tombs. Western Reserve Bull., 1914, XVI.
L'apophyse transverse de la 7e vertébre cervicale. Bull. et Mém. Soc. d'Anthrop., Paris, 1914, V, 282–294.
(With B. G. Dupre)
A transitional type of cervical rib. Anat. Rec., 1901, VIII, 313–324.
Geological evidence of man's antiquity. Cleveland Med. J., 1915, XIV, 24–30
The teeth of the primitive man. Ibid., 253–264.
The romance of teeth. Western Reserve Bull., 1915, XVII.
Report on skeletons of Westenhaver Mound. Ohio Arch. and Hist. Quart., 1917, XXVI, 238–256.

MUSEUM OF THE OHIO STATE ARCHAEOLOGICAL SOCIETY, COLUMBUS, OHIO

The Department of Anthropology of the Ohio State Archeological Society, founded in 1885, is since 1898 under the efficient curatorship of Mr. W. C. Mills. While essentially a department of archeology,

it has been of service to Physical Anthropology through careful collection of skeletal material from the Ohio mounds. A report on some of these remains was recently published by Prof. T. Wingate Todd, in Mills' *Explorations of the Westenhaver Mound* (see above). The excellent publications of Mr. Mills, gathered in *Certain Mounds and Village Sites in Ohio*, 3 vol., 8°, Columbus, 1902–1918, contain also various references and illustrations relating to the skeletal remains discovered in the excavations. A collaborator of Mr. Mills, Mr. H. C. Shetrone, has recently given us a good book on *The Indian of Ohio*, in which he presents a sensible view of the "mound-builder" question.

FIELD MUSEUM OF NATURAL HISTORY, CHICAGO

In 1891, in preparation for the World's Columbian Exposition at Chicago, there was established, as already mentioned in another connection, a Department of Anthropology, under the direction of Prof. F. W. Putnam. The broad and ambitious plans of the Department contemplated the securing of extensive archeological and ethnological collections, and at the same time an initiation of a comprehensive research in Physical Anthropology. Dr. F. Boas was placed in charge of the somatological investigations, which were carried on by a corps of students trained for the occasion, and the work extended eventually to many of the native tribes, as well as to the school-children of Toronto (Canada) and Oakland (California). The object was an extensive anthropometric survey of the tribes, and an advance, as far as possible, of studies on the development of the child in different parts of this country. The work on the tribes was practically an extension of that carried on by Doctor Boas and associates during several preceding years on the northwestern tribes of Canada; while the investigations on the children were to supplement the auspicious beginnings made in that line at Boston and Worcester.

In 1892 Dr. G. M. West became associated with the Department as Assistant in Physical Anthropology; and it was partly under his supervision that the extensive series of measurements were obtained on school children, as well as on the Indians. This field work engaged some fifty students, mostly from the Harvard Medical School, and extended to tribes from Alaska and Canada to Mexico. Important abstracts of the results were later published by Doctor Boas. (See his bibliography, p. 292f.). An anthropometric laboratory and instructive somatological exhibits were also arranged for the Exposition.

Besides the anthropometric data, the just mentioned field workers brought together considerable osteological material, to which were added a series of crania collected in previous years by Doctor Boas himself; and when the Exposition closed, to be succeeded by the Field Columbian Museum (now Field Museum of Natural History), these gatherings together with the anthropological exhibits and equipment, became the foundation of the section of Physical Anthropology at the Museum.[2] Dr. G. M. West acted for a time as the Curator of the section.

In 1895, a position of Assistant Curator in charge of Physical Anthropology at the Field Museum was given to Dr. George A. Dorsey. Additional anthropometric work was carried on the living Indians as well as on their skeletal remains, numerous casts of racial types were made, and more osteological material was collected. In 1897 an interesting exhibit showing variations in the human skeleton was arranged, filling twenty-six cases.

In 1898 Doctor Dorsey became Curator of the Department of Anthropology at the Field Museum, which position he held until 1915. Between 1898 and 1913 he served also as Professor of Comparative Anatomy at the Northwestern University Dental School; and between 1905–1908 as assistant professor and from 1908–1915 as Associate Professor in Anthropology at the University of Chicago.[3]

While active in Physical Anthropology Doctor Dorsey published numerous contributions to that science, a list of which is appended:

Crania from the necropolis of Ancon, Peru. Proc. A. A. A. S., 1894, 358–369.

The lumbar curve in some American races. Bull. Essex Inst., Salem, 1895, XXVII, 53–73.

History of the study of anthropology at Harvard University. Denison Quarterly, 1896, IV, 77–97.

Photograph and skeleton of a native Australian. Bull. Essex Inst., 1896, XXVIII, 57–69.

A Maori skull with double left parietal bone. Chic. Med. Record, 1897, XII, (repr. 4 pp).

Notes on the numerical variations of the teeth in fifteen Peruvian skulls. Dental Cosmos, 1897, XXXIX, (repr. 3 pp).

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[2] For details see *An Historical and Descriptive Account of the Field Columbian Museum*, Publ. I (Vol. I, No. 1), of the Museum, 8°, Chicago, 1894, 90 pp.; and Dorsey, Geo. A. The Department of Anthropology of the Field Columbian Museum, *Am. Anthrop.*, 1900, n. s. *II*, 247–265.

[3] In 1915, regrettably, he gave up all these positions, to devote himself to travel, journalism, and motion pictures of primitive peoples. Recently he has been commissioned in the Intelligence Service of the United States Army.

Numerical variations in the molar teeth of fifteen New Guinea crania. Dent. Rev., Chic., 1897, XI, (repr. 7 pp).
A Peruvian cranium with suppressed upper lateral incisors. Dental Cosmos, 1897, XXXIX, (repr. 3 pp).
Physical anthropology. Science, 1897, VI, 109–120. (a, Scope; b, Problem; c, Museum exhibit; d, Importance.)
A rare form of occipito-atlantal articulation. Bost. Med. & Surg. J., 1897, CXXXVII, (repr. 7 pp).
A sexual study of the size of the articular surfaces of the long bones in aboriginal American skeletons. Bost. Med. & Surg. J., 1897, CXXXVII, (repr. 12 pp).
Wormian bones in artificial deformed Kwakiutl crania. Am. Anthrop., 1897, X, 169–173.
The long bones of Kwakiutl and Salish Indians. Am. Anthrop., 1897, X, 174–182.
Observations on a collection of Papuan crania. Anthrop. Series, Field Columbian Mus., Aug. 1897, II, No. 1, 1–48.
Observations on the scapulae of Northwest coast Indians. Am. Natur., 1897, XXXI, 736–745.
A bibliography of the anthropology of Peru. Field Columbian Mus. Publ. 23, Chicago, 1898, 55–206.
The Department of Anthropology of the Field Columbian Museum. A review of 6 years. Am. Anthrop., 1900, II, 247–265.
Recent progress in Anthropology at the Field Columbian Museum. Ibid., 1901, III, 737–750.

At present, the section of Physical Anthropology at the Field Museum is in charge of Dr. F. C. Cole. Doctor Cole, together with the late Dr. Wm. Jones, carried out some years ago, in connection with the Cummings Expedition, considerable anthropometric work on the natives of the Philippines. The records, extending to more than 2,000 living Filipinos, are being prepared for publication. We also owe to Doctor Cole a report on the "Distribution of the Non-Christian Tribes of Northwestern Luzon," *Am. Anthrop.*, 1909, XI, 329–347; and a memoir on "The Wild Tribes of Davao District, Mindanao," Anthropological series, Field Mus. Nat. Hist., 1913, XII, No. 2, 49–203.

The twenty-nine cases of exhibits relating to Physical Anthropology now in the Field Museum, contain material illustrating the methods and purposes of work in this branch, crania showing differences in race, sex, and age, skeletal variations, and some pathological specimens. The stored collections comprise several hundred crania and skeletons, which will be noted more especially on another occasion.

The Department of Anthropology at the Field Museum is now under the curatorship of Dr. Berthold Laufer, who though principally an ethnologist and sinologue, is a warm friend of Physical Anthropology; and when the new building of the Museum now under construction is

completed, affording chance for more extensive exhibits as well as laboratory room and proper storage with possibility of expansion, the development of the section of Physical Anthropology will doubtless proceed with a renewed vigor.

THE UNIVERSITY OF CHICAGO

Some attention has been given to Physical Anthropology at the University of Chicago since its opening in 1892. Two courses, elementary and advanced, were offered in this branch by Frederick Starr, Assistant Professor of Anthropology at the University 1892–1895, and Associate Professor of the branch as well as Curator in the Walker Museum of the University since 1895. Both courses have been given until recently. Between 1893 and 1895 Professor Starr was assisted by Dr. G. M. West, who was appointed a Docent in Anthropology at the University and gave particular attention to somatology.

In 1905 a second Assistant Professor of Anthropology appears at the University in Dr. Geo. A. Dorsey, and in 1908 he also is named Associate Professor. The instruction in Physical Anthropology was relegated to him and continued until 1915, since when the courses have again been in charge of Professor Starr.

Professor Starr's main published contribution to Physical Anthropology is the "Physical Characters of the Indians of Southern Mexico" (*The Decennial Publ. Univ. Chicago*, 4°, 1902, IV, 59 pp.), in which he gives measurements on a number of tribes of the Mexican natives. But items of anthropological interest are also found in his "Ethnographic Notes from the Congo Free States," *Proc. Davenport Acad. Nat. Sc.*, 1909, XII, 95–222; and in his Notes upon the Ethnography of Southern Mexico, *Ibid.*, 1899–1903, VIII–IX.

Doctor Dorsey, after leaving the Field Museum, has also severed his connection with the University.

MILWAUKEE, WISCONSIN

As early as 1881 a large series of measurements on school children were made at Milwaukee, under the direction of George W. Peckham, teacher of biology in the Milwaukee high school, and the results were published in the *Sixth and Seventh Annual Reports of the State Board of Health of Wisconsin*, Madison, 1882, 28–73, 12 charts; 1883, 185–189). Regrettably this very creditable effort remained, so far as Milwaukee and Wisconsin are concerned, quite isolated.

ST. LOUIS, MISSOURI

In 1892 Dr. W. Townsend Porter of St. Louis with his assistants measured not less than 33,500 boys and girls in the public schools of that city. The main object of these measurements were to determine the relations between physical and mental development of the children, and the work resulted in the following publications by Doctor Porter:

The physical basis of precocity and dullness. Trans. Ac. Sc. St. Louis, 1893, VI, No. 7.

The relation between the growth of children and their deviation from the physical type of their sex and age. Ibid., No. 10.

Untersuchungen der Schulkinder in Bezug auf die physischen Grundlagen ihrer geistigen Entwickelung. Verhandl. der Berl. anthropol. Ges., Sitz. Juli 15, 1893, 337–354.

This important effort remained also isolated.

THE WASHINGTON UNIVERSITY MEDICAL SCHOOL, ST. LOUIS, MISSOURI

The Anatomical Department of this school is in charge of Prof. R. J. Terry, who is actively interested in Physical Anthropology. A brief course on Anthropology is included in the University subjects giving credit for higher degrees, and "facts of Physical Anthropology and lines of investigation have always been discussed in the lectures and laboratory course for medical students" (letter from Professor Terry). The library of the Department includes current and other anthropological literature and, mainly due to the efforts of Professor Terry, there are now in the Department important anthropological collections. Dr. Chas. Danforth, a member of the staff of the Department, has recently paid considerable attention to anthropological problems. In dissection a particular care is given to variations.

Publications of anthropological bearing from the Department are as follows:

TERRY (R. J.)—Rudimentary clavicles and other abnormalities of the skeleton of a white woman. J. Anat. & Physiol., 1899, XXXIII, 413–422.

BARTLETT (WILLARD)—A contribution to the surgical anatomy of the middle cranial fossa. Annals of Surg., 1902.

TERRY (R. J.) AND NATHANIEL ALLISON—Tuberculosis of the skeleton. Am. J. Orthop. Surg., 1906–1907, IV, 398–408.

TERRY (R. J.)—Observations on the development of the mammalian vomer. Anat. Record, 1909, III, 525–529.

DANFORTH (C. H.)—Some notes on a family with hereditary congenital cataract. Am. J. Ophth., 1916.

DANFORTH (C. H.)—The inheritance of congenital cataract. Am. Naturalist, 1916, I, 442–448.
DANFORTH (C. H.)—Some aspects of the study of hereditary eye defects. Am. J. Ophth., March, 1916, repr. 3–8.
DANFORTH (C. H.)—Is twinning hereditary? J. Hered., 1916, VII, 195–202.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS

In 1906 the Department of Sociology at the University was renamed "The Department of Sociology and Anthropology," and Dr. Albert E. Jenks, a well known anthropologist, was added to the Department. Doctor Jenks was formerly connected with the Bureau of American Ethnology (1901–1902), and served as Assistant Chief of the Bureau of Non-Christian Tribes, Manila, P. I. (1902), and as Chief of the Ethnological Survey, P. I. (1903–1905). In 1907 Doctor Jenks' title was changed to that of Professor of Anthropology. After the death of Doctor Smith, head of the Department, the latter was enlarged and reorganized by the introduction of practical social service courses, and Professor Jenks was made Chairman of the Department.

An instructional course entitled Physical Anthropology, largely a lecture course for a single semester each year, was introduced in the University year 1907–1908. A "Seminar in Anthropology" has been given since 1910, usually each semester, confined generally to subjects in the field of Physical Anthropology and to laboratory methods. There is a modest collection of racial skeletal material, hair, and casts.

Professor Jenks' publications of more direct interest to physical anthropology are as follows:

The Bontoc Igorot. Ethnol. Surv. Publ., Manila, 1905, I, 266 pp.
The people of Minnesota. Papers and Proc. Minn. Ac. Social Sc., II, 1908. Published also by Northfield News, 1909, 198–213.
Bulu knowledge of the gorilla and chimpanzee. Am. Anthrop., 1911, XIII, 56–64.
Ethnic census of Minneapolis. (Amalgamation study.) Am. J. Sociol., May, 1912, XVII, 776–782.
Science of anthropology in the Western Hemisphere and the Pacific Islands. In Reports upon the present condition and future needs of the science of anthropology. Carnegie Inst. of Wash., 1913, 29–59.
A Piebald family of White Americans. Am. Anthrop., 1914, XVI, 221–237.
The legal status of Negro-White amalgamation in the United States. Am. J. Sociol., 1916, XXI, 666–679.
The failure and revival of the process of pigmentation in the human skin. Proc. Nat. Ac. Sc., 1916, II, 164–167.
Spotted asses. J. Hered., 1916, VII, 165–168.
Indian-White amalgamation. An Anthropometric study. Studies in the Social. Sciences, Univ. of Minn., March, 1916, No. 6, 24 pp.

Pitted ear lobes of congential origin. J. Hered., 1916, VII, 553–554.
The "Half-breed" as an ascendant. In Papers and Proc. Ann. Meet. Am. Sociol. Soc., 1917, 7 pp.

UNIVERSITY OF CALIFORNIA

The Department of Anthropology at the University of California begun in 1899 with a series of important expeditions, but was not formally organized until 1901, when Dr. A. L. Kroeber and Dr. P. E. Goddard were appointed to positions in connection with the Department and when plans for a museum were initiated. It received a great impetus in 1903, through the appointment of Prof. F. W. Putnam as Professor of Anthropology at the University and as Curator of its new Anthropological Museum, positions which he occupied until 1909, dividing his time between California and Harvard. One of the most notable events of his administration from the standpoint of Physical Anthropology, was the active prosecution of the Hearst Egyptian Expedition, under Dr. Geo. A. Reisner, which resulted in the acquisition of a great and precious collection of pre-dynastic and early dynastic skeletal material from the Nile valley, now partly at the Museum of the University of California and partly at the Peabody Museum, Cambridge.

From 1902 to 1909, we also find coöperating with the Department Dr. J. C. Merriam, Assistant, later Associate and now (1912—) full Professor of Palaeontology and Historical Geology at the University of California. During these years he delivered in the Department, during the second half of each season and as a course in Physical Anthropology, a series of lectures on the "Geological History of Man." Professor Merriam remains one of the most earnest students of the problems of man's antiquity on this continent. For years now he has carried on careful explorations in the California caves; he re-investigated the history of the Calaveras skull and the deposits of the Table Mountain; and we owe to him a careful examination into the La Brea find of human bones, which a few years ago created such unwarranted expectations. His published contributions to these subjects are as follows:

Recent cave exploration in California. Am. Anthrop., 1906, VIII, 221–228.
Preliminary report on the discovery of human remains in an asphalt deposit at Rancho La Brea. Science, 1914, XL, 198–203.

At this year's spring meeting of the National Academy Professor Merriam delivered the two William Ellery Hale Lectures, on "The

Beginnings of Human History from the Geological Record;" and since the organization in 1916 of the National Research Council, he has taken a large part in the activities of this body and has shown himself invariably an earnest friend of Physical Anthropology.

Doctor Kroeber, since 1908 Curator of the Anthropological Museum of the University and since 1911 Associate Professor of Anthropology, while professionally an ethnologist, has always favored the development of Physical Anthropology and the promotion of research relating to man's antiquity in the California mounds, as well as in other directions. We owe to him an early recognition of the modern character of the La Brea skull, and two papers dealing directly with anthropometric observations. These are:

Measurements of Igorotes. Am. Anthrop., 1906, VIII, 194–195.
Measurements of Chukchis. Am. Anthrop., 1909, XI, 531–533.

In 1906, at the request of Doctor Kroeber, the skeletal collections from California preserved at that time in his Department were subjected to examination by the writer, the report upon them being published in Vol. IV, No. 2, of the University Publications.

In 1910–1912, a course of lectures in connection with the Department, on "Origin and Antiquity of Man," was given yearly by Mr. N. C. Nelson; and in 1915–1916 a similar course was in charge of Dr. W. D. Wallis. For many years there has also been given a comprehensive course in General Anthropology, dealing for one semester with man's evolution, antiquity, heredity, etc., through the medium of three lectures and one conference a week. This course is given by the department staff in coöperation.

THE SAN DIEGO MUSEUM

This Museum, which dates only from the beginning of 1917, is located in one of the permanent structures of the Panama-California Exposition (1915–1916), and its collections are a heritage from the Exposition. This heritage includes however the most comprehensive and in many respects the most valuable existing exhibits in Physical Anthropology.

These exhibits came to existence through an arrangement entered into in 1912 between the Exposition and the Smithsonian Institution, under plans and in charge of the writer. They consist almost wholly of original material, secured for the purpose on a series of expeditions, and extend to the subjects of (1), Human evolution and early man;

(2) Human development (from the egg onward); (3) Human variation; and (4) Man's decline and elimination, together with racial pathology. The exhibits and the expeditions undertaken in connection with their preparation, were briefly described in the *Proceedings of the National Academy of Sciences*, of 1915 and 1916 (I, 235–238; *ibid.*, 407–410; and II, 32–37).

A due credit for the possibilities of realization of these exhibits is due to Dr. Edgar L. Hewett, Director of the Exposition and now head of the Museum, and Mr. D. C. Collier, the first President of the Exposition.

Miscellaneous

While the preceding notes touch briefly on all the more important centers of anthropological activity in this country, they fail to mention a number of incipient or detached collections in Physical Anthropology, such as those at the Valentine Museum, Richmond, the Carnegie Museum, Pittsburgh, the Davenport Academy of Sciences, and those of several of the Anatomical departments connected with our Universities, such as Ithaca, Stanford, etc.; they do not touch upon the subject of gymnasium anthropometry, practiced in many colleges, of prison anthropometry, or that of the various developing stations for child welfare; they do not include a number of detached students, who have within recent years begun to contribute to knowledge in our branch; and they of necessity have avoided the important collateral fields of heredity and eugenics.

As to the various American collections in Physical Anthropology, they will receive separate attention in the *Journal* in the future. College and prison anthropometry follow, regrettably, their own lines and use more or less separate instruments, in result of which most of the work is lost to Anthropology; and the many measurements that are being taken by nurses, teachers, physicians, etc., on children, while of practical utility, do not possess sufficient accuracy to be of strict scientific value.

Of individual investigators, a special mention should be made, in New York—of Prof. R. S. Woodward, for his work in racial psychology; Prof. E. L. Thorndike, for his *Mental and Social Measurements*, which are useful to anthropometry; and of Dr. Maurice Fishberg, for his contributions on the anthropology and eugenics of the Jews; at Cornell—of Prof. Burt G. Wilder, now retired, who brought together the remarkable brain collection of that University; at Princeton—of

Prof. E. G. Conklin, who has given us recently an excellent work on *Heredity and Environment in the Development of Men* (2d ed., Princ., 1918); in Washington, D. C.—of Alexander Graham Bell, who has given us a series of valuable papers and memoirs on heredity, longevity and related subjects; of Dr. J. B. Nichols, for his painstaking study on the numerical proportions of the sexes at birth; of Dr. Tom Williams, for his very interesting studies on delinquent and abnormal children; of Drs. Frank Baker and Geo. M. Kober, sincere and active friends of Physical Anthropology; of Mr. Paul Popenoe, the very active and efficient editor of *The Journal of Heredity;* of Mr. Wm. H. Babcock, the 1917–1918 President of the Anthropological Society of Washington, who has devoted years of work to the problems of pre-Columbian European contacts with this continent; of Mr. E. T. Williams, chief of the Far-Eastern Division at the State Department and actual President of the Anthropological Society, a close student of the racial problems of eastern Asia; at the University of Wisconsin—of Prof. C. R. Bardeen, who has contributed much to our knowledge of the development of the skeleton and other parts; at the Stanford University—of Prof. A. W. Myer, who has given us a series of careful notes on osteological and other anomalies observed by him or his students during dissections. This list could be enlarged and prolonged to other cities; it should include workers in collateral lines, particularly in racial pathology and insurance statistics, such as Messrs. F. L. Hoffman and L. I. Dublin, and in various branches of biology, such as Gerrit S. Miller, and others. It represents collectively a very considerable asset to Physical Anthropology. How important is the total of these side contributions can best be seen from the following lists, which represent publications relating to physical anthropology[4] by living authors which were not mentioned in this report in other connections, from the four most closely related periodicals, namely the *American Anthropologist*, the *Anatomical Record*, the *American Journal of Anatomy*, and the *Journal of Heredity*,[5] since the beginning of their publication.

[4] Some of these papers are not exclusively somatological, but contain extended observations of value to Physical Anthropology.

[5] Before this the journal was known as *The American Breeders Magazine*, which also contains a number of articles relating more or less directly to Physical Anthropology.

THE AMERICAN ANTHROPOLOGIST, N. S.

LANCASTER, PA., 1899–1918

YEAR	VOL.	NO.	
1899,	I,	*1.*	BABCOCK (W. H.)—The Nanticoke Indians of Indian River, Del.; 277–282.
		3.	MOONEY (J.)—The end of the Natchez; 510–521.
1900,	II,	*3.*	COOK (ALICE C.)—The aborigines of the Canary Islands; 451–493.
1901,	III,	*1.*	BOGORAS (W.)—The Chukchi of Northeastern Asia; 80–108.
			JOHNSTON (W. W.)—The ill health of Charles Darwin; 138–158.
1902,	IV,		HUXLEY (H. M.)—Preliminary report of an anthropological expedition to Syria, 47–51.
		2.	WRIGHT (R. R.)—Negro companions of the Spanish explorers; 217–228.
		3.	WARDLE (H. NEWELL)—Evanescent congenital pigmentation in the sacro-lumbar region; 412–420.
			CUTLER (J. E.)—Tropical acclimatization; 421–440.
		4.	FISHBERG (M.)—Physical anthropology of the Jews. I.—The Cephalic Index; 684–706.
1903,	V,	*1.*	FISHBERG (M.)—Physical anthropology of the Jews; II.—Pigmentation; 89–106.
		3.	VERNER (S. P.)—The yellow men of central Africa; 539–544.
		4.	WOOD (EDITH E.)—Notes on oriental [Chinese, Japanese] babies, 659–666.
1904,	VI,	*2.*	SKINNER (G. A.)—"Casco foot" in the Filipino; 299–302.
		5.	MOORE (CLARENCE B.)—Aboriginal urn-burial in the United States; 660–669.
			CRAMPTON (C. W.)—Pubescence; 705–709.
1905,	VII,	*1.*	NICHOLS (J. B.)—The sex composition of human families; 24–36.
			HENSHAW (H. W.)—Popular fallacies respecting the Indians; 104–113.
		4.	MERRIAM (C. HART)—The Indian population of California; 594–606.
1906,	VIII,	*2.*	BREWSTER (E. T.)—Notes on the determination of sex in man; 236–242.
			STEFÁNSSON (V.)—The Icelandic colony in Greenland; 262–270.
			HITZ (J.)—Helen Keller; 308–324.
		4.	MONTGOMERY (H.)—Remains of prehistoric man in the Dakotas; 640–651. (Mainly archeological.)
1907,	IX,	*1.*	BRENNEMAN (J.)—The sacral or so-called "Mongolian" pigment spots of earliest infancy and childhood, with especial reference to their occurrence in the American negro; 2–30.

1907, IX, *2.* KENNARD (A. S.)—The racial derivation of the Ossetes; 276–286.
3. WRIGHT (G. F.)—Recent geolgic changes as affecting theories of man's development; 529–532.

1908, X, *1.* MONTGOMERY (H.)—Prehistoric man in Manitoba and Saskatchewan; 33–40. (Mainly archeological.)
HERZOG (M.)—The brain weight of the Filipino; 41–47.
2. NORTH (A. W.)—The native tribes of Lower California; 236–250.
4. MONTGOMERY (CH. J)—Survivors from the cargo [of slaves] of the negro slave yacht "Wanderer;" 611–623.

1910, XII, *3.* BARROWS (D. P.)—The Negrito and allied types in the Philippines; 358–376.

1912, XIV, *1.* FEWKES (J. W.) etc.—Symposium on "The problem of the unity or plurality and the probable place of origin of the American aborigines;" 1–59.
FISHBERG (M.)—Remarks on Radosavljevich's critical contribution to "School Anthropology;" 131–141.

1913, XV, *4.* SCOTTSBERG (C.)—Observations on the natives of the Patagonian Channel region; 578–616.
PEARL (R.) AND R. N. SALAMAN—The relative time of fertilization in the ovum and the sex ratio amongst Jews; 668–674.

1914, XVI, *1.* EMMONS (G. T.)—Portraiture among the north Pacific coast tribes; 59–67.

1915, XVII, *2.* HATT (G.)—Artificial moulding of the infant's head among the Scandinavian Lapps; 245–256.
3. POYNTER (C. W. M.)—A study of Nebraska crania; 509–524.

1916, XVIII. *2.* SPECK (F. G.)—Remnants of the Machapunga Indians of North Carolina; 271–276.
3. GREGORY (W. K.)—Note on the molar teeth of the Piltdown mandible; 384–387.

1917, XIX, *4.* POYNTER (C. W.)—Some conclusions based on studies in cerebral anthropology; 495–502.

ANATOMICAL RECORD

PHILADELPHIA, 1907

1908, II, *3.* BOOKWALTER (C. F.)—Report on a curious variation in the insertion of the *Rhomboideus* major in a negro; 96–98.
4. CORSON (E. R.)—Fusion of the semilunar and cuneiform bones in both wrists of an adult male negro; 143–145.
9. EVANS (H. M.)—On an instance of two subclavian arteries to the early arm bud in man; 411–424.

1910, IV, *3.* MURPHY (J. B.)—Note on the sulcus lunatus in negro and white brains and its relation to the area striata; 115–122.
4. JOHNSTON (J. B.)—The evolution of the cerebral cortex; 143–166.

1911, v. *4.* ORTON (S. T.)—Note on an anomaly of the postcentral sulcus simulating the double rolandic of Giacomini; 179–182.

8. HATAI (SHINKISHI)—An interpretation of growth curves from a dynamical standpoint; 373–382.

10. MELLUS (E. L.)—A contribution to the study of the cerebral cortex in man; 473–482.

12. SMITH (G. M.)—A statistical review of the variations in the anatomic positions of the caecum and the processus vermiformis in the infant; 549–556.

1912, VI, *12.* GIVENS (M. H.)—Duplication of the inferior vena cava in man; 475–486.

1913, VII, *1.* SCHAEFFER (J. P.)—On two muscle anomalies of the lower extremity; 1–8.

6. INGALLS (N. W.)—Musculi sternales and infra-clavicularis; 203–206.

10. LORD (F. P.)—Observations on the temporo-mandibular articulation; 355–368.

1914, VIII, *1.* SCHAEFFER (J. P.) AND L. H. NACHAMOFSKY—Some observations on the anatomy of the upper extremities of an infant with complete bilateral absence of the radius; 1–14.

COBEY (J. F.)—An anomalous right subclavian artery; 15–19.

PERKINS, Jr. (J. D.)—An anomalous muscle of the leg: Peroneo-calcaneus internus; 21–25.

4. JOHNSTON (J. B.)—The nervus terminalis in man and mammals; 185–198.

5. SANTEE (H. E.)—The brain of a black monkey (Macacus maurus): The relative prominence of different gyri; 257–266.

6. DUPRE (B. G.) AND T. W. TODD.—A transitional type of cervical rib, with a commentary; 313–324.

LEONHART (G. P.)—A case of stylo-hyoid ossification; 325–332.

HARVEY (R. W.)—A case of multiple renal arteries; 333–339.

DRIVER (J. R.) AND A. B. DENISON—The morphology of the long accessorius muscle; 341–347.

8. MILLER (J. C.)—Ossiculum lus; 415–419.

1915, IX, *2.* DECKER (H. R.)—Report of the anomalies in a subject with a supernumerary lumbar vertebra; 181–189.

DOCKERAY (F. C.)—Volumetric determinations of the parts of the brain in a human fetus 156 mm. long (crown-rump); 207–211.

6. LORD (F. P.)—Some anatomical deductions from a pathological temporo-mandibular articulation; 459–464.

7. MEYER (A. W.)—Spolia anatomica, addenda I; 483–527.

10. BEVIER (GEORGE)—An anomalous origin of the subclavian artery; 785–789.

1915, x, *1.* INGALLS (N. W.)—Truncus arteriosus communis persistens; 9–14.
ATWELL (W. J.)—On the conversion of a photograph into a line drawing; 39–41.
1916, x, *5.* McCOTTER (R. E.)—Three cases of the persistence of the left superior vena cava; 371–383.
9. McCOTTER (R. E.)—Regarding the length and extent of the human medulla spinalis; 559–564.
1916, xi, *3.* GILLASPIE (C.), LEWIS I. MILLER AND MORRIS BASKIN—Anomalies in lobation of lungs with review of literature; 65–75.
GILLASPIE (C.), L. I. MILLER AND MORRIS BASKIN—Anomalous renal vessels and their surgical significance; 77–86.
1917, xii, *1.* MEYER (A. W.)—Spolia anatomica, addenda II; 43–94.
CLARK (E.) AND R. K. LHAMON—Observations on the sweat glands of tropical and northern races; 139–147.
O'MALLEY (T. S.)—An anomalous Vena pulmonalis within the lung; 173–175.
2. WALLIS (W. D.)—The development of the human chin; 315–328.
HARVEY (R. W.)—Notes on two cases of anomalour right subclavian artery; 329–330.
1917, xiii, *2.* REYNOLDS (L. R.)—Hyperphalangism accompanied by epiphyses and muscular deficiencies; 113–126.
3. LILLIE (R. D.)—Variations of the canalis hypoglossi; 131–144.
5. HOWELL (J. A.)—An experimental study of the effect of stress and strain on bone development; 233–252.
LYON, Jr. (M. W.)—An hereditary case of congenital absence of one kidney; 303–304.

THE AMERICAN JOURNAL OF ANATOMY,

BALTIMORE, MD., 1901–

1901, i, *1.* BARDEEN (C. R.) AND W. H. LEWIS—Development of the limbs, body-wall and back in man; 1–37.
1902, i, *2.* LEWIS (W. H.)—The development of the arm in man; 145–183.
BARDEEN (C. R.)—A statistical study of the abdominal and border-nerves in man; 203–228.
4. SUDLER (M. T.)—The development of the nose, and of the pharynx and its derivatives in man; 391–416.
1903, ii, *2.* SCHLAPP (M. G)—The microscopic structure of cortical areas in man and some mammals; 259–281.
1904, iv, *1.* McMURRICH (J. P.)—The phylogeny of the crural flexors; 33–76.
1905, iv, *2.* BARDEEN (C. R.)—The development of the thoracic vertebrae in man; 163–174.

1905, IV, *3.* BARDEEN (C. R.)—Studies of the development of the human skeleton; 265–303.
4. GAGE (SUSANNA P.)—A three weeks' human embryo, with especial reference to the brain and the nephric system; 409–444.

1906, V, *4.* BREMER (J. L.)—Description of a 4-mm. human embryo; 459–480.

1906, VI, *1.* FLINT (J. M)—The development of the lungs; 1–137.

1907, VI, *3.* BARDEEN (C. R.)—Development and variation of the nerves and the musculature of the inferior extremity and of the neighboring regions of the trunk in man; 259–390.
4. MCMURRICH (J. P.)—The phylogeny of the plantar musculature; 407–437.

1907, VII, *1.* ESSICK (C. R.)—The corpus ponto-bulbare—A hitherto undescribed nuclear mass in the human hind brain; 119–137.
2. MELLUS (E. L.)—Relations of the frontal lobe in the monkey; 227–244.
STREETER (G. L.)—The cortex of the brain in the human embryo during the fourth month with special reference to the so-called "Papillae of Retzius;" 337–344.

1908, VIII, *1.* TAUSSIG (F. J.)—The development of the hymen; 89–108.
2. BARDEEN (C. R.)—Early development of the cervical vertebrae and the base of the occipital bone in man; 181–186.

1909, IX, *1.* JACKSON (C. M.)—On the prenatal growth of the human body and the relative growth of the various organs and parts; 119–161.

1910, X, *2.* SCHAEFFER (J. P.)—The sinus maxillaris and its relations in the embryo, child and adult man; 313–368.

1911, XI, *3.* GUDERNATSCH (J. F.)—Hermaphroditismus verus in man; 267–278.

1911, XII, *1.* LISSER (H.)—Studies on the development of the human larynx; 27–66.
WHITEHEAD (R. H.) AND J. A. WADDELL—The early development of the mammalian sternum; 89–106.

1912, XIII, *1.* SCHAEFFER (J. P)—The genesis and development of the nasolacrimal passages in man; 1–24.
ESSICK (C. R.)—The development of the nuclei pontis and the nucleus arcuatus in man; 25–54.

1912, XIV, *1.* BULLARD (P. B.)—A comparative study of the three principal regions of the spinal cord in a series of mammals; 73–105.
MELLUS (E. L.)—The development of the cerebral cortex; 107–117.

1913, XIV, *4.* WIEMAN (H. L.)—Chromosomes in man; 461–471.

1913, XV, *3.* WALLIN (I. E.)—A human embryo of thirteen somites; 319–331.

1914, XVII, *1.* THYNG (F. W.)—The anatomy of a 17.8 mm. human embryo; 31–112.

1915, XVII, *2.* DAVIS (H. K.)—A statistical study of the thoracic duct in man; 211–244.

1914, XVI, *3.* MACKLIN (C. C.)—The skull of a human fetus of 40 mm.; 317–385; 387–426.
BREMER (J. L.)—The earliest blood-vessels in man; 447–475.
1915, XVIII, *3.* KINGSBURY (B. F.)—The development of the human pharynx. I. The pharyngeal derivatives; 329–397.
1916, XX, *1.* SCHAEFFER (J. P.)—The genesis, development, and adult anatomy of the naso-frontal region in man; 125–146.
1917, XXI, *2.* KOCH (J. C.)—The laws of bone architecture; 177–298.
1917, XXII, *1.* STREETER (G. L.)—The factors involved in the excavation of the cavities in the cartilaginous capsule of the ear in the human embryo; 1–25.
3. WATT (J. C.)—Anatomy of a seven months' foetus exhibiting bilateral absence of the ulna accompanied by monodactyly (and also diaphragmatic hernia); 385–437.

THE JOURNAL OF HEREDITY,

WASHINGTON, D. C., 1914–

1914, V, *1.* BELL (A. G.)—How to improve the race; 1–7.
JORDAN (D. S.)—Prenatal influences; 38–39.
3. JOHNSON (R. H.)—Marriage selection; 102–110.
4. WILLCOX (W. F.)—Differential fecundity [in U. S. population]; 141–148.
Editorial—Eugenics in the colleges; 186.
5. CHASE (J. H.)—Weakness of eldest sons; 209–211.
Editorial—Extinction of family names; 212–215.
6. KELLOGG (V. L.)—Faces and races; 249.
Editorial—A Polynesian-Norwegian metisse; 249–254.
7. *Editorial*—Second report of the Committee on Immigration of the Eugenics Section of the American Genetic Association; 297–300.
COLE (L. J.)—Biological eugenics; 305–312.
REDFIELD (C. L.)—Results of early marriage; 316–317.
8. HANKINS (F. H.)—The declining birth rate; 361–367.
9. SMITH (G. E.)—Man's pedigree; 377–388.
SOUTHARD (E. E.)—Eugenics vs cacogenics; 408–414.
10. HOFFMANN, G. v.—Eugenics in Germany; 435–436.
Editorial—Constructive eugenics; 458–462.
11. BLAKESLEE (A. F.)—Corn and men; 511–518.
12.
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CANADA

The recent history of Physical Anthropology in Canada relates to the northwestern explorations, under the auspices of the British Association for Advancement of Science and of the American Museum of Natural History; to explorations of various ossuaries in the eastern lake region; and to the work carried on within recent years in connection with the Geological Survey of Canada.

In 1884, at its meeting in Montreal, the British Association for Advancement of Science voted that,

> Dr. E. B. Tylor, Dr. G. M. Dawson, General Sir J. H. Lefroy, Dr. Daniel Wilson, Mr. Horatio Hale, Mr. R. G. Haliburton, and Mr. George W. Bloxam be a Committee for the purpose of investigating and publishing reports on the physical characters, languages, industrial and social condition of the Northwestern tribes of the Dominion of Canada; that Mr. Bloxam be the Secretary, and that the sum of 50 *L. s.* be placed at their disposal for the purpose.

The activities of this important Committee extended until 1898, and twelve annual reports on the results of its work were presented to

the Association. These contain the following contributions of interest to Physical Anthropology:

3rd Report—Suggestions for investigation of physical characters, senses and mental characters. Rep. B. A. A. S., 1888, 174–175.

4th Report—A letter of Dr. F. Boas, on his first investigations. Ibid., 1889, 233–236.

Wilson (Rev. E. F.)—Report on the Sarcee Indians. Ibid., 242–255.

5th Report (published separately)—First general report on the Indians of British Columbia. By Dr. Franz Boas.

6th–12th Report—Articles by Dr. Boas (see his bibliography); Physical characteristics of the tribes of British Columbia, 12th Rep., 1899, 628–644.

Report on the Kootenay Indians of south-eastern British Columbia (includes some measurements of the Shushwap), by A. F. Chamberlain, 8th Rep., 1893, 5–71; and the Summary of the work of the Committee, by Dr. Boas, with Index to Reports, and detailed tables of measurements (4–12), 12th Rep., 667–688.

The somatological observations secured under the auspices of this Committee extended to eighteen of the westermost tribes of Canada, in addition to which some skeletal material was secured from this region. And the investigations and collections thus favorably initiated have continued since under the auspices of the American Museum of Natural History, by the Jesup Expedition and by Mr. Harlan I. Smith, with the result that from the physical as well as other standpoints the northwestern tribes are now among the best known and best represented in our collections.

The work of Mr. Harlan I. Smith, since 1911 Archeologist of the Geological Survey of Canada, deserves a special mention in this connection. Though primarily interested in a separate branch of Anthropology, he has always taken great interest and scrupulous care in collecting skeletal material, and we owe him a grateful appreciation for valuable collections of this nature from Kentucky, from Lytton, B. C., from the Thompson and Frazer river regions, and from other localities.

As to explorations in ossuaries, mounds and village sites, special mention in Canada is due to *Mr. A. F. Hunter*, who has made extensive explorations in the Huron village sites of Ontario, which resulted in additions to our collections of skeletal material from that important region; and to *Prof. H. Montgomery*, of Toronto, who for many years has explored in ossuaries, burial pits and burial mounds in Canada and North Dakota. Professor Montgomery has published a number of papers on his explorations which are indirectly of interest to Physical Anthropology. In one of these, on the Otonabee, Ont., mounds, he

figures some skulls from the 'Serpent' mound and compares them with a Huron cranium (*Trans. Can. Inst.*, 1910, IX, Pt. I). A valuable collection of skulls which he secured from the mounds in North Dakota form part of the collection of the United States National Museum.

Dr. R. B. Orr and Mr. A. Blue of Toronto, Mr. C. Hill-Tout of British Columbia, Mr. J. C. Tache and Mr. W. D. Lightfall, have all explored buried sites and collected skeletal material, which is deposited in various Canadian museums and will be dealt with more especially on another occasion.

Still another living worker in Canada who has excavated considerably in ossuaries and whose explorations have resulted in important additions of skeletal material to our collections, is *Col. George E. Laidlaw*, of Ontario.

THE GEOLOGICAL SURVEY, OTTAWA, CANADA[6]

The Division of Anthropology in connection with the Geological Survey of Canada was established in 1910, and the section of Physical Anthropology was added in 1914, being placed in charge of Dr. (Sir) Francis H. S. Knowles. Doctor Knowles' work began in fact in the summer of 1912, when he spent six months in field work among the Iroquois. There is no public or laboratory instruction in connection with the Division, and it is regrettable to say that no such instruction has been given thus far anywhere in Canada. Doctor Knowles himself has been mainly interested in the Iroquois people, but unfortunately his work was interfered with for a time by poor health. He has published a paper on "The Glenoid Fossa in the Skull of the Eskimo" (Geol. Surv., 1915, Bull. No. 9, 1–25); and also a "Report on a Skeleton from near Savona, B. C." (Summary Rep. Geol. Surv. for 1918).

Mr. J. A. Teit, engaged for the Division upon the field work in the Interior of British Columbia, has taken a large number of photographs of Indian types, made a series of measurements, and collected valuable notes on the Physical Anthropology of the Indians of the Thompson River and other tribes of that region. Mr. D. Jenness, ethnologist attached to the Canadian Arctic Expedition, 1913–1916, has collected much Eskimo skeletal material and has prepared a valuable collection of measurements, notes and MSS. on the Physical Anthropology of the Eskimo, that awaits his return from the war for publication.

[6] For much assistance in connection with his report on Canada and especially the Geological Survey the writer is indebted to Dr. Francis H. S. Knowles of the Survey.

Remarks on Mexico

As already mentioned under Part *B*, the history of Physical Anthropology in Mexico is being written by Prof. Nicolas León, of the National Museum, Mexico, in consequence of which a brief note on the subject in this place must suffice.

Up to recently somatology in Mexico was represented practically by Doctor León alone, and he did or at least tried to do creditable work under many difficulties. In 1910, following the Mexican session of the XVII International Congress of Americanists, there was organized in Mexico City the "International School of American Archeology and Ethnology," and in connection with this School, in 1916, Professor Boas was called to give a course of instruction in Anthropometry; but this, due largely to a lack of properly prepared students, was not successful. During the years of the revolution, according to latest information, the skeletal collections of the Museo Nacional were fortunately spared and they have been recently rearranged by Doctor León. In June of 1917, there was formed a "Section of Physical Anthropology" in the "Dirección de Estudios Arqueológicos y Etnograficos," under the Secretaria de Fomento, in city of Mexico, and the "Direccion" (Bureau) together with the Section were placed in charge of Sr. Manuel Gamio. A course of instruction in Physical Anthropology was organized under Dr. M. L. de la Vega and has made modest beginnings. The development of the Section, however, has been greatly hindered by a lack of instruments and collections, as well as in other directions. Recently (1919) its name has been changed to that of "Dirección de Antropologia."

Considerable somatological work has been done in Mexico within the last few decades by investigators from other countries. These included the French Scientific Mission to Mexico and Central America, the somatological results of which were published by Professor Hamy (4°, Paris, 1891); Professor Starr (*q. v.*), who has measured and taken casts of a series of Indian tribes in Central and Southern Mexico; and the writer, who examined the tribes from Sonora and Chihuahua to the State of Morelos.

It is to be hoped that a strong center in Physical Anthropology will soon develop in Mexico, which possesses such anthropological riches, and is confronted in its living population by so many anthropological problems which must have a direct bearing on the existence and progress of the Republic.

Summary

Leaving details out of consideration, it is readily seen that the recent history and present status of Physical Anthropology in the United States (and Canada as well as Mexico) are the history and status of an important branch of science in its formative stages, advanced more or less in different localities according to the presence or absence of circumstances favorable to development. We see a gradual change from individualistic and accidental efforts to sustained, well-planned, organized work, and from speculative procedure to one severely analytic and critical, strictly scientific in the best modern sense of the word. In addition, in the course of this change the branch has become strongly buttressed by great reference collections which constitute a firm foundation for future development.

The initial, narrower problems which first engrossed the branch in this country, as elsewhere, are passing, and the way opens to the greater, national, continental and world fields of research, with their broad horizons. And we are confronted no more with the attraction merely of the unknown, but also with a strong call of duty for the application of the gained knowledge. The volume and importance of the accumulating knowledge in this line will soon be such, that no high-class center of learning will be able to afford not to profit by it, and we can confidently look to early and considerable extension of anthropological instruction. And with substantial advance in knowledge and instruction in this branch, will come also the needed support for publication, for wider field work, for extensions in study, and proper provision for the workers.

Here is a branch of science well worth the best efforts of those who devote themselves to it; and they are fortunate in that they can still assist so much in its perfection and application.

Central and South America

In the latin American republics south of Mexico, Physical Anthropology is as yet largely dormant, mainly through the lack of trained workers. Some exceptions may be noted, particularly from Argentina, but it is a fact that thus far anthropological collections and research in Central and South America have been carried on mainly by outsiders. One of the most promising and grateful functions of north-American anthropologists will be to assist in every possible way in changing these conditions for the better.

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